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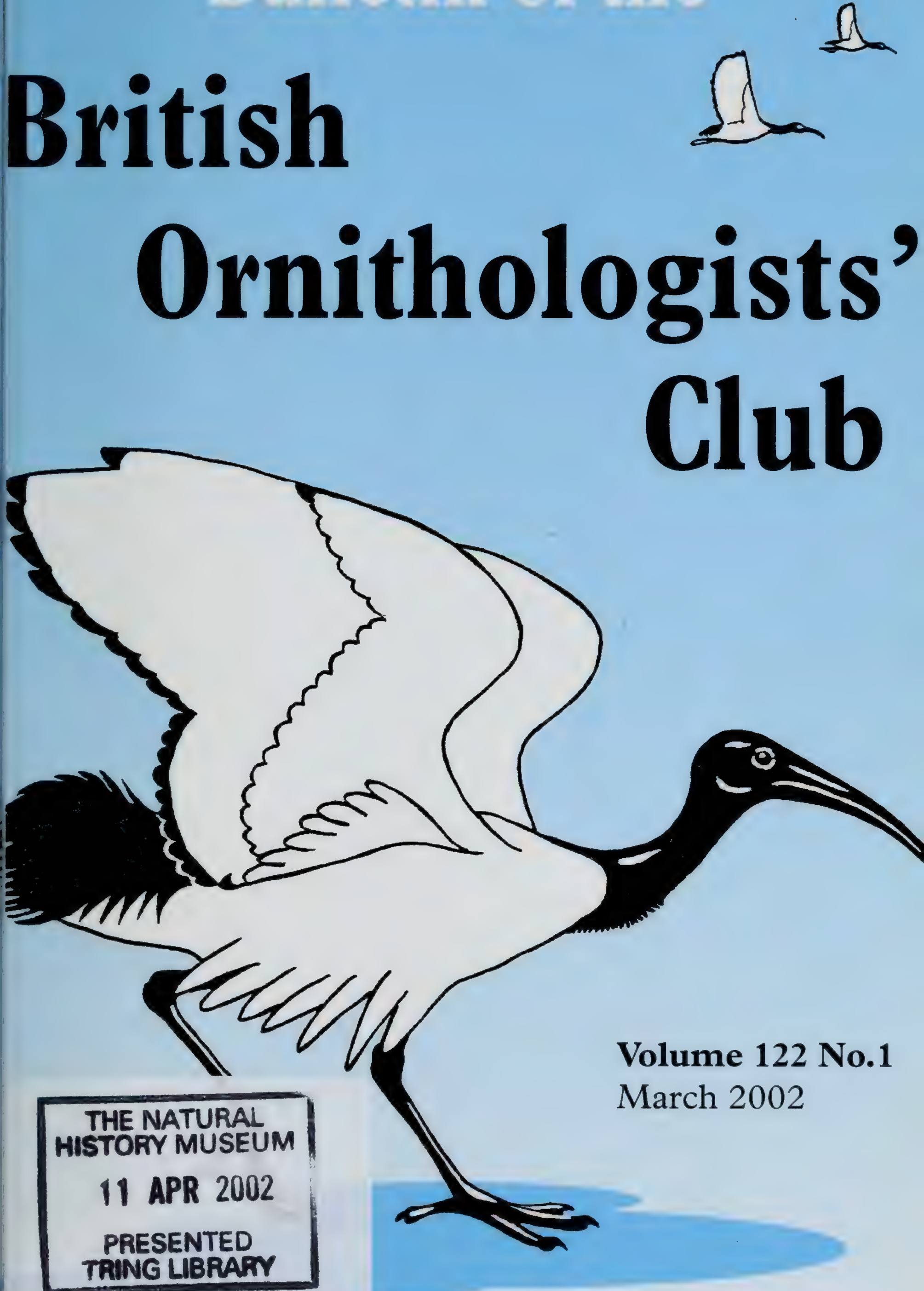
CORRECTIONS TO TEXT

Page	45	Line	39	201 not 200
“	148	“	40	*zelandica* not *zealandica*
“	163	“	33	2001 not 2002
“	180	“	13	*Procellaria aequinoctialis conspicillata* not *Procellaria conspicillata*
“	185	“	28	*promeropirhynchus* not *promerophyrhynchus*
“	275	“	42	*swindernianus* not *swinderianus*
“	“	“	49	*andicola* not *andecola*
“	278	“	7	*tyrianthinus* not *tryanthinus*
“	279	“	1	*lagopus* not *lapopus*
“	280	“	8	*strigilatum* not *strigillatum*
“	297	“	6	*bourcierii* not *bourcierrii*
“	“	“	10	*Syndactyla* not *Syndactila*
“	298	“	21	*rutila* not *ruttilla*
“	299	“	15	*nattererii* not *natterrerii*
“	300	“	13	*macrorhynchos* not *macrorhynchus*
“	307	“	14	*Eurystomus* not *Euystomus*
“	“	“	17	*Todiramphus* not *Todirhamphus*
“	“	“	23	*gilviventris* not *gilvivenris*
“	308	“	15	*novaehollandiae* not *novaehollandies*
“	“	“	16	*Ptiloprora* not *Ptiliprora*
“	“	“	20	*Ephthianura* not *Epthianura*
“	309	“	9	*Lophorina* not *Lophorhina*
“	“	“	18	*Heteralocha* not *Heterolocha*
“	310	“	13	*Ephthianura* not *Epthianura*

Bulletin of the
British Ornithologists' Club



Volume 122 No.1
March 2002

THE NATURAL
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FORTHCOMING MEETINGS

See also BOC website: **http://www.boc-online.org**

Tuesday 30 April

ANNUAL GENERAL MEETING AT 6.p.m., followed by a **Club Social Evening.** There will be no speaker, but Members are invited to bring along one or two slides (or a specimen!) of a bird of topical interest, and to speak **for not more than 5-10 minutes** about it. The aim will be to generate discussion, and to facilitate the exchange of information between Members.

Applications to the Hon. Secretary by ***16 April,*** *please, including subjects to be raised, and any special facilities required.*

Tuesday 25 June

Dr Clifford B.Frith Ph.D - *'Artful sex - the bowerbirds and their amazing bowers'* .

Clifford is a self-employed natural history photographer, author, publisher, and ornithologist. Early ornithological positions include The Natural History Museum, London, and the Royal Society of London Research Station on Albabra Atoll, Indian Ocean. His PhD was awarded for intensive long-term evolutionary studies of bowerbirds and birds of paradise. A life member of the BOU and AOU, Clifford is an Honorary Research Fellow of the Queensland Museum and, jointly with wife Dawn, recipient of the RAOU's D.L. Serventy Medal for Ornithology. Together with Dawn he has written, illustrated, and published several small Australian natural history books as well as the large *Cape York Peninsula - a Natural History* (Reed, 1996). Clifford is senior author of *The Birds of Paradise – Paradisaeidae* (1998) of the acclaimed OUP 'Bird Families of the World' series. He and Dawn have recently completed a companion volume about *The Bowerbirds - Ptilonorhynchidae* for a 2002 release. The Friths live within upland rainforest of Queensland, Australia, which they share with Southern Cassowaries, two megapode and four bowerbird species, a bird of paradise, and much more.

Applications to the Hon. Secretary by ***11 June*** *please.*

Tuesday 24 September

Dr Joanne Cooper - *'Storm Petrels in the soapdish and Black Robins on the verandah: the birds of the Chatham Islands, New Zealand'.*

From a background in geography and geology (but with a long-term interest in birds), Jo studied the Late Pleistocene avifaunas of Gibraltar for her PhD at the Bird Group of The Natural History Museum. During this time, she also began looking into the Museum's extensive collections of sub-fossil bird remains from the Chatham Islands, originally gathered for Lord Walter Rothschild in the 1890s. One thing led to another and eventually she headed off to New Zealand to pursue the work further. Based at the Museum of New Zealand in Wellington, she also had an opportunity to visit the Islands themselves as a volunteer with the Department of Conservation. Since arriving back in the UK in August 2001, she has returned to the Bird Group, where she now works as a curator.

Applications to the Hon. Secretary by ***10 September*** *please.*

Future meetings - Tuesdays:

5 November - Professor Ian Newton - *'Population limitation in birds: a review of the experimental evidence'.*
3 December - Jon Hornbuckle - *'The birds of Beni Biological Station, Bolivia'.*

MEETINGS are normally held in the **Sherfield Building** of **Imperial College**, South Kensington, London, SW7. The nearest Tube station is at South Kensington; a map of the area will be sent to members, on request. (Limited car parking facilities can be reserved, on prior application to the Hon. Secretary). The cash bar is open from **6.15 pm**, and a buffet supper, of two courses followed by coffee, is served at **7.00 pm.** (A vegetarian menu can be arranged if ordered at the time of booking). Informal talks are given on completion, commencing at about 8.00 pm. Dinner charges were increased to **£18.00**, as from **1st January 2002.**

Overseas Members visiting Britain are especially welcome at these meetings, and the Hon. Secretary would be very pleased to hear from anyone who can offer to talk to the Club, in **2003,** giving as much advance notice as possible.

Enquiries to *Hon. Secretary,* Michael Casement, Dene Cottage, West Harting, Petersfield, Hants. GU31 5PA. UK. Tel/FAX:01730-825280 (or Email: mbcasement@aol.com).

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Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 122 No. 1 Published 17 March 2002

CLUB NEWS

Correspondence on membership, changes of address and all other matters should be addressed to the *Hon. Secretary,* Cdr M.B. Casement, OBE, RN, Dene Cottage, West Harting, Petersfield, Hants. GU31 5PA, UK. (or E-mail: mbcasement@aol.com). For details of Club Meetings see inside front cover.

Subscription Rates for 2002 are unchanged from last year @ **£18.00 p.a.** but **£12.00 only** for paid-up Members of BOU and renewals were due on 1st January. If you have not already done so, please complete NOW the subscription renewal form, enclosed with the December issue 121 (4), to avoid the need for further reminders.

The BOC Website - http://www.boc-online.org This continues to expand, and grow in usefulness. It now contains full details of subscription rates, joining application forms and contents list of recent *Bulletins*. Do please look at it, and let us have your suggestions for further improvement.

The Membership List 2002 is available, free of charge to all requesting a copy, on application to the *Hon. Secretary*: This shows addresses (including E-mail addresses, where known), for all paid-up Members as at 31 December 2001. Members are requested to inform *the Hon. Secretary* of all corrections or changes, without delay, for despatch of the *Bulletin*. To offset the cost of postage, any contribution, or a stamped and addressed (A5-sized) envelope will be gratefully accepted.

Membership News

Hon. Life Members - Rule (3). We welcome to this select list: **Guy Mountfort OBE,** and **Captain Sir Thomas Barlow Bt., DSC, RN,** who both joined the Club in 1951.

We congratulate **Professor Wilhelm Meise** on attaining his **100th birthday** on 12th September 2001. He was previously a non-Member Subscriber before joining the Club in 2000 as a full Member, in accordance with the new Rule (21). He worked under Stresemann at the Berlin Museum in the 1920s, becoming curator of the Dresden Museum in 1929. Five years later he gave one of the main lectures at the International Ornithological Congress at Oxford. From 1951-1969 he was the curator of the Hamburg Museum, and in 1976 he became Professor for Zoology at the University of Hamburg. Professor Meise is best remembered as the editor of Schönwetter's *Handbuch der Oologie*, (1960-92) and *Naturgeschichte der Vogel* (1958-66) but he published numerous other papers, and is still actively pursuing his ornithological interests.

Clifford B. Frith, member of the BOU since 1972 (a Life Member since 1993) and of the BOC since 1996, has been awarded the degree of Ph.D. (by publication). His thesis "Evolutionary studies of bowerbirds and birds of paradise: affinities and divergence", including sixty-two publications from peer-reviewed scientific literature, was submitted to Griffith University, Brisbane, Australia, in July 2001 and accepted in late December 2001.

Notices

Royal Naval Birdwatching Society (RNBWS) *Sea Swallow* database. Reports in several journals of the demise of the annual journal *Sea Swallow*, with the launch in 2001 of the tri-service journal *Osprey,* are premature; *Sea Swallow* Vol 51 will be published later this year. Stan Howe has now input records of all identifiable species recorded at sea by HM and Merchant ships over the past 55 years, and published in *Sea Swallows* 1-50. This database (of seabirds and landbirds) totals over 40,000 seaborne records, covering all oceans of the world, and is readily searchable. The ultimate aim is to make this unique database available on a website, but authors seeking records of trans-ocean movements should make initial contact with Stan Howe by e-mail: showembou@aol.com.

"The Earl & the Pussycat: the Life and Legacy of the 13th Earl of Derby"; exhibition at the Walker Art Gallery, Liverpool, 1 June to 8 September 2002, which will reunite many original natural history paintings with the specimens from which they were drawn. Following the talk by Dr. Clemency (Clem) Fisher at the 906th meeting of the Club on 15th January, plans for a Club visit to join a two day conference in Liverpool, to include visits to the exhibition and to see more originals by John Gould, Joseph Wolf and other famous bird artists at Knowsley Hall, are now being investigated. Probable dates are **Fri 5 / Sat 6 July 2002**. Please note in your diaries and **Watch this space .**

MEETINGS

The 904th meeting of the Club was held on Tuesday 6 November, at 6.15 pm, in the Sherfield Building Annexe, Imperial College, and was attended by 23 Members and 9 guests.

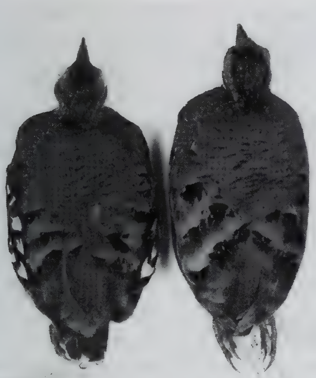
Members present were:
Dr C.F. MANN (*Chairman*), Sir David BANNERMAN Bt, Captain Sir Thomas BARLOW Bt., DSC, RN, Cdr M.B. CASEMENT RN, D.R. CALDER, Professor R.A. CHEKE, D.J. FISHER, F.M. GAUNTLETT, A. GIBBS, D. GRIFFIN, J.P. HUME, J.A. JOBLING, Mrs A.M. MOORE, D.J. MONTIER, R.G. MORGAN, Mrs M.N. MULLER, Dr. R.P. PRŶS-JONES, Dr. P.G.W. SALAMAN, R.E. SCOTT, F.D. STEINHEIMER (*Speaker*), S.A.H. STATHAM, C.W.R. STOREY and M.P. WALTERS.

Guests attending were:
Lady BANNERMAN, Mrs J.B. CALDER, Mrs M.H. GAUNTLETT, Mrs B. M. HAMMOND-GIBBS, Dr. A. MELLAND, Mrs M. MONTIER, P.J. MOORE, Dr. P. RECORDON, and M. J. WALTON.

After dinner, Frank Steinheimer gave an illustrated talk titled *Undiscovered Cambodia: the Endemics of the Cardamom Mountains*. This was based on his experiences as deputy leader of the Fauna and Flora International (FFI) expedition to Cambodia, in 2000, during which he caught a severe form of malaria. This talk had been postponed twice, due to his illness, and Frank was warmly welcomed on this third occasion.

Frank outlined the geographical significance of the Cardamom mountains, which rise steeply to a height of *c.*1,500 m from the surrounding very low plains, thus providing isolated areas of mountain forest rich in endemic species of flora and fauna, especially birds.

Ornithological studies of the Cardamom Mountains *sensu stricto*, and similar ranges within Cambodia, comprise: The Elephant Range (Delacour, Jabouille & Lowe 1920s), Kirikom Range (Feinstein 1960s and Frédérick Goes 1990s), Mt Aural Range (FFI Expedition 2001), Central Cardamom Mts. (Engelbach 1930s/1940s, FFI Expedition 2000) and Mt Samkos Range (Eames & Steinheimer 2000), considered *sensu lato* in relation to topography, also Khao Soi Dao, Krast-Province of E Thailand, (Hugh Smith 1920s, King 1960s, McClure 1970s, Round 2000). Frank based his studies on this ornithological research to review the endemic avifauna of this mountainous area, at both species and subspecies levels.



Chestnut-headed Partridge *Arborophila cambodiana ssp.*,

Left: BMNH No. 2000.5.1, adult female, Mt Tumpor (12° 22'N, 103° 02'E), 5 March 2000;

Right: BMNH No. 2000.5.2, sex unknown, Mt Khmaoch (12° 09'N, 103° 00'E), 19 March 2000, coll. by Jonathan Eames & Frank Steinheimer during the FFI expedition to the Cardamom Mountains. *Photo:* Harry Taylor, © The Natural History Museum

Three Cardamom endemics arguably deserve species status, the most clear-cut of which is the Chestnut-headed Partridge *Arborophila cambodiana* (see photograph). Two specimens were collected during his studies in the Mt Samkos Range in early 2000, both showing distinctive features intermediate between the SE Thai *A. c. diversa* and the nominate *A. c. cambodiana* from Bokor, Elephant Range, suggesting a new subspecies in the Central Cardamom Mountains and Samkos Range. The Cambodian White-tailed Robin *Myiomela (leucura) cambodiana* is, in his opinion, too distinctive not to be upgraded to species level, as it is the sole "subspecies" lacking light blue on the forehead, and is endemic to the Cardamoms *sensu lato* The final putative endemic species would be the Cambodian Laughingthrush *Garrulax ferrarius*, but in Frank's opinion it visually lacks sufficient distinctive features to be treated as a full species, and would be better viewed as a subspecies of the Black-hooded Laughingthrush *Garrulax milleti*

Frank showed slides of the following endemic subspecies of the Cardamom Mountains *sensu stricto*: Grey-chinned Minivet *Pericrocotus solaris nassovicus*, Mountain Bulbul *Hypsipetes mcclellandii canescens,* Blue-winged Minla *Minla cyanouroptera rufodorsalis*, Black-throated Sunbird *Aethopyga saturata cambodiana*, and Lesser Racket-tailed Drongo *Dicrurus remifer lefoli*.

Considering the Cardamoms *sensu lato*, the list would further include Silver Pheasant *Lophura nycthemera lewisi,* Blue Pitta *Pitta cyanea aurantiaca,* Ochraceous Bulbul *Alophoixus ochraceous cambodianus*, Streaked Wren Babbler *Napothera brevicaudata griseigularis*, White-browed Scimitar Babbler *Pomatorhinus schisticeps klossi,* Rufous-throated Fulvetta *Alcippe rufogularis khmerensis*, White-bellied Yuhina *Yuhina zantholeuca canescens,* White-tailed Leaf Warbler *Phylloscopus davisoni intensior*, Fire-breasted Flowerpecker *Dicaeum ignipectus cambodianum* and probably also the Striped Tit Babbler *Macronous gularis saraburiensis.*

The 905th meeting of the Club was held on Tuesday 4 December, at 6.15 pm, in the Sherfield Building Annexe, Imperial College, and was attended by 30 Members and 19 guests.

Members present were:
Dr C.F. MANN (*Chairman*), Miss H. BAKER, Sir David BANNERMAN Bt, Captain Sir Thomas BARLOW Bt., DSC, RN, A.F. BEST, Mrs D.M. BRADLEY, Cdr M.B. CASEMENT RN, Dr. R.J. CHANDLER, Professor R.A. CHEKE, J.H.W. CHITTY, D.J. FISHER, F.M. GAUNTLETT, Revd. D.W. GLADWIN, A. GIBBS, D. GRIFFIN, C.A.R. HELM, K. HERON, J.P. HUME, J.A.

JOBLING, R.H. KETTLE, D.J. MONTIER, R.G. MORGAN, Mrs M.N. MULLER, R.C. PRICE, R.J. PRYTHERCH, N.J. REDMAN, P.J. SELLAR, F.D. STEINHEIMER, C.W.R. STOREY and M. J. WALTON.

Guests attending were:
Lady BANNERMAN, M. BRADLEY, Mrs C.R. CASEMENT, Dr. M. CHERRY, Mrs M.H. GAUNTLETT, Mrs J.M. GLADWIN, Mrs B. M. HAMMOND-GIBBS, Mrs, J.A. JONES, Ms. P. McGUIRE, Mrs M. MONTIER, C.A. MULLER, I. PACKER, R. RANFT, R. RIDDINGTON, Dr. B.M. ROGERS, Ms B. RYAN, T.R. SMEETON, Cdr. J.M. TOPP RN, and Dr J. SPARKS (*Speaker*).

After dinner John Sparks, former head the BBC's Natural History Unit, entertained the meeting with an illustrated talk entitled "*In Bird Quest - Bringing birds to the TV screen*", illustrated with spectacular slides and video film-clips. The following is a brief synopsis:

Birds are highly active, colourful creatures, often displaying intriguing behaviour. They also do something that we dream about - move through the air often with consummate grace. It is not surprising that they continue to be wildlife stars of the flickering silver screen. Capturing them on film or video is often a challenge. The equipment needed is heavy and bulky, and often has to be lugged into remote locations. In order to film the reproductive cycle of a species, it may be necessary for the cameraman to be on location for several months. Such was the case when the nesting of Ross's Gull was recorded for a BBC-2 series *Realms of the Russian Bear* – an expedition was mounted to the tundra in the Kolyma Region of Siberia. The author has always been keen to present ethological research and talked of the way some of Niko Tinbergen's and Konrad Lorenz's classic experiments were recreated by means of dramatic reconstruction in a series *The Discovery of Animal Behaviour.* It was immensely satisfying that the birds behaved exactly as reported by these illustrious scientists! Some problems cannot be predicted. Some years ago, a big Outside Broadcast Unit for a Birdwatch programme in July was deployed on the Bass Rock. Just before transmitting live on BBC-1, a bank of dense fog swept in from the sea and shrouded the rock and its Gannets!

Logistics can be a major challenge, as when a team from The Natural World (BBC-2) attempted to get close to the vast colony of Lesser Flamingoes which breed in the centre of Natron, a caustic soda lake in East Africa. In the end a raft and cameraman were lifted by helicopter 10 miles from the shore to be set down on the corrosive mud within photographic range of the birds, yielding unforgettable images of the event. Even small sequences can take a great deal of careful planning. A 90-second sequence for *Battle of the Sexes* (BBC-2) on the way female Penduline Tits fool their mates into taking full responsibility for brooding the eggs and rearing the family needed the cooperation of Dr. Herbert Hoi in Vienna a year beforehand to set up pairs in aviaries. As it happened, these birds failed to respond and the whole sequence had to filmed in the wild within a few days using tiny cameras which 'looked' into the nests. The quest for new examples is never ending. For the same series, the astonishing display of the Red-capped Manakin was filmed for the first time. Phil Savoie, the cameraman, had to ratchet-strap himself 15 m up a tree in Costa Rica for several hours each day, covered with camouflaged netting, and using special high speed film stock. Even then, the birds mated behind a tree trunk!

There is no limit to the hardships which cameramen endure, and their ingenuity is limitless; they have braved lightning strikes in the top of rain-forest trees, used blow-up dolls from Ann Summers, radio controlled helicopters, paragliders even planting miniature cameras on the birds themselves – all to bring the fascination of birds to the television screen

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The 906th meeting of the Club was held on Tuesday 15 January, at 6.15 pm, in the Sherfield Building Annexe, Imperial College, and was attended by 29 Members and 17 guests.

Members present were:
Dr C.F. MANN (*Chairman*), Miss H. BAKER, Sir David BANNERMAN Bt, Captain Sir Thomas BARLOW Bt., DSC, RN, I.R. BISHOP, Mrs D.M. BRADLEY, Cdr M.B. CASEMENT RN, Professor

R.A. CHEKE, I.D. COLLINS, Dr C.T. FISHER (*Speaker*), D.J. FISHER, J.B. FISHER, F.M. GAUNTLETT, A. GIBBS, Revd. T.W. GLADWIN, D. GRIFFIN, C.A.R. HELM, J.P. HUME, G.P. JACKSON, J.A. JOBLING, D.J. MONTIER, Mrs A.M. MOORE, R.G. MORGAN, Dr P.W.G. SALAMAN, T.R. SMEETON, S.A.H. STATHAM, F.D. STEINHEIMER, N.H.F. STONE and C.W.R. STOREY.

Guests attending were:
Lady BANNERMAN, Ms G. BONHAM, M. BRADLEY, Mrs J.B. CALDER, Mrs C.R. CASEMENT, Mrs B.H. FISHER, W.B. FISHER, Mrs A.L. FISHER, E. FULLER, Mrs M.H. GAUNTLETT, Mrs J.M. GLADWIN, Mrs B. M. HAMMOND-GIBBS, Ms K. KNOWLES, P.J. MOORE, Mrs M. MONTIER, Mrs S. STONE, and Ms K. WAY.

On completion, Dr Clemency Fisher, Curator of Birds & Mammals, National Museums and Galleries on Merseyside, Liverpool and Curator-in-Charge, *"The Earl & the Pussycat; the life & legacy of the 13th Earl of Derby*", gave a fascinating presentation on the forthcoming exhibition, which will be open from June – September 2002 at the Walker Art Gallery, Liverpool. The following is a brief synopsis of her talk, which was illustrated with spectacular of slides of great historical interest.

Edward Smith Stanley, 13th Earl of Derby (1775-1851) was an aristocrat who was interested in many fields, such as fine and decorative art, including Elizabethan miniatures, Old Masters and seventeenth century furniture, but who had in particular a long and abiding passion for natural history. Lord Derby greatly improved the Knowsley estate, his home just east of Liverpool, laying out new access roads, improving the grazing and enclosing the whole estate within a wall which was nearly ten miles long. Within this area he could keep exotic animals, many of which roamed free. He built two aviaries, one a huge wire structure in which large birds could fly, and several paddocks with stone walls for mammals such as porcupines and small kangaroos.

When the living collections were sold after the Earl's death in 1851, they totalled 318 species (1272 individuals) of birds and 94 species (345 individuals) of mammals, of which 756 had been bred at Knowsley. Lord Derby is credited with being the first person to breed in captivity the Néné, the Stanley Crane (which was named after him) and the Crested Fireback Pheasant, and he was probably the first to breed Ostrich, Rhea and Quelea. He kept many species which were rare then and are now extinct, such as Carolina Parakeets and Passenger Pigeons. The latter he bred so successfully that they were allowed to fly freely during the day, but at the sale of the collections they were divided into five lots and were never recorded breeding again.

In the days before photography, the only way the Earl could get his animals recorded for posterity was to have their portraits painted. For this reason the Nonsense Poet Edward Lear came to Knowsley, where he painted many of the living animals for Lord Derby and invented a form of rhyme to entertain the children of the household. John Gould, Benjamin Waterhouse Hawkins and Joseph Wolf also painted the living animals at Knowsley. Many of these paintings are still kept in the Library at Knowsley Hall, and some of these will be displayed in the exhibition, in many cases with the animals (which were preserved after their eventual death) from which they were painted.

The 13th Earl also acquired many preserved specimens of birds and mammals, which he incorporated in his ever-growing museum at Knowsley Hall. He was also offered large collections of reptiles, amphibians and invertebrates, but most of these he passed to the British Museum. Many of the bird and mammal specimens he acquired were of undescribed species, and became the specimens on which type descriptions of new species (by ornithologists such as John Latham and John Gray) were based. Some of these, such as the White Swamp-hen *Porphyrio stanleyi*, which is one of only two specimens known, are of great scientific importance.

When the Earl died his museum was bequeathed to the people of Liverpool, and became the foundation collection of the Liverpool Museum. The exhibition is intended to celebrate the 150 years of our existence and there will be a linked conference, probably in early July, to which members of the British Ornithologists' Club are cordially invited.

ANNUAL GENERAL MEETING

The Annual General Meeting of the British Ornithologist's Club will be held in the Sherfield Building, Imperial College, London SW7 at 6.00pm on Tuesday 30 April 2002.

AGENDA

1. Minutes of the 2001 Annual General Meeting (see *Bull. Brit. Orn. Cl.* 121 (3): 148-149).
2. Chairman's report.
3. Trustees Annual Report and Accounts for 2001 (both to be distributed at the meeting).
4. The *Bulletin*.
5. Club Publications.
6. BOU/BOC collaboration.
7. The election of Officers. The Committee proposes that:
   (i) Revd. T.W. Gladwin be re-elected as *Vice-Chairman* (for another year),
   (ii) Mr D.J. Montier be re-elected as Honorary Treasurer,
   (iii) Commander M.B. Casement, OBE, RN, be re-elected Hon. Secretary.
8. Any other business of which notice shall have been given in accordance with Rule (12).

BOOKS RECEIVED

del Hoyo, J., Elliot, A., & Sargatal, J. (eds) 2001. *Handbook of the birds of the world*. Vol 6, Mousebirds to Hornbills. Pp 589, 45 colour plates, 385 colour photographs, 270 distribution maps. Lynx Edicions, Barcelona. ISBN 84-87334-30X. £110. 310 x 240mm.

Another superb volume in the ambitious HBW series by Lynx Edicions in collaboration with BirdLife International. Volume 6 begins with a lengthy foreword and shorter Introduction, followed by the detailed family accounts. The 42 page Foreword on Avian Biocoustics (including 12 pages of references) by the late L.F. Baptista and D.E. Kroodsma is effectively a tribute to the former who drafted the principal text, which discusses bio-accousticians' machines, production and perception of sounds, development, function and geographic variation.

This Volume details the three orders Coliformes, Trogoniformes and Coraciformes classified into the twelve families Mousebirds, Trogons, Kingfishers, Todies, Motmots, Bee-eaters, Rollers, Ground-Rollers, Cuckoo-Roller, Hoopoe, Woodhoopoes and Hornbills. The volume will also be of great interest to devotees of African ornithology as it contains four Afrotropical endemic families.

The family accounts and related individual species accounts follow the well-established format of earlier volumes (including clear distribution maps) with subspecies citations and brief geographical notes. The care and attention to detail is exemplified by eg. *Todiramphus chloris* Collared Kingfisher, awarded a generous 49 ssp(!); *Merops persicus* Blue-cheeked Bee-eater (2 ssp), *M. superciliosus* Olive Bee-eater (2 ssp) and *M. philippinus* Blue-tailed Bee-eater (monotopic) treated as members of a superspecies.

Four pages of (alphabetical) references to the original scientific descriptions are followed by 58 pages detailing the *c.* 6,000 references cited in the species texts. With a weight of nearly 4 kg and price as indicted this volume is nevertheless an absolute must for all interested in ornithology.

S. J. Farnsworth

A range extension for the Cipó Canastero *Asthenes luizae* and the consequences for its conservation status

by Marcelo Ferreira de Vasconcelos, Santos D'Angelo Neto & Marcos Rodrigues

Received 27 June 2000

The Cipó Canastero *Asthenes luizae* is a neotropical ovenbird (Furnariidae) described in 1990 from a small and isolated population inhabiting a mountain top of Serra do Cipó in southeast Brazil (Pearman 1990, Vielliard 1990). The genus *Asthenes* is distributed in the Andean-Chacoan-Patagonian region of South America, and its discovery in the mountains of Southeast Brazil represents evidence of a zoogeographic connection among these regions (Vuilleumier *et al.* 1992).

For some years after its discovery, *A. luizae* was known only from the type-locality, named 'Alto da Boa Vista', 19°17'S, 43°34'W, municipality of Santana do Riacho, Minas Gerais State (Fig. 1). The place is a < 10 km^2 rocky outcrop at Serra do

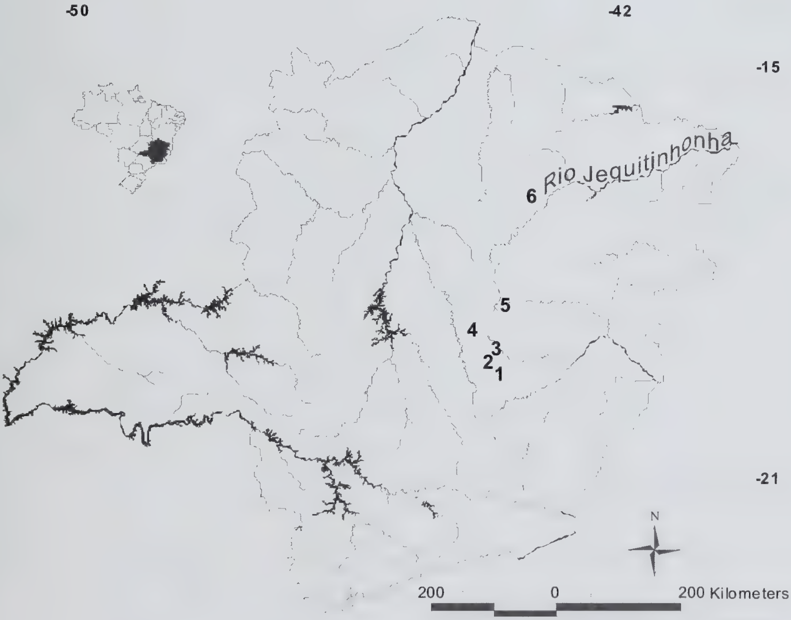

Figure 1. Map of Minas Gerais State showing localities of records for the Cipó Canastero Asthenes luizae. 1 Serra do Cipó National Park; 2 Alto da Boa Vista, Serra do Cipó; 3 Ribeirão do Campo waterfalls; 4 Campo Alegre; 5 Capivari; 6 Campina do Bananal.

Cipó (Collar *et al.* 1992). This fact led Collar *et al.* (1992) to include the species in *The Threatened Birds of the Americas: the ICBP/IUCN Red Data Book* on the premise that the species inhabits "...as yet only a tiny area within the Serra do Cipó, Minas Gerais, Brazil, where it faces possible threats from cattle-grazing, fires and brood-parasitism". This was highly, if not all, based on the scanty information presented in Pearman (1990) and Vielliard (1990). Due to the total lack of data on its range and population status, *A. luizae* is officially considered as 'Vulnerable' in Brazil (Andrade 1998).

A few years later, Andrade *et al.* (1998) and Cordeiro *et al.* (1998) published new records of the Cipó Canastero. These records extended its range 100 km north, and also recorded it within the Serra do Cipó National Park (Table 1). All these records lie south of the Rio Jequitinhonha Valley (Fig. 1). Here however, we describe the occurrence of a population of *A. luizae* north of Rio Jequitinhonha Valley, and discuss the consequences of such a discovery for its conservation status.

On 29 February and 1 March 2000 we undertook field work in Campina do Bananal, 16°51'S, 43°02'W, a 900–1,400 m plateau of the Espinhaço Range in the municipality of Botumirim, north of Rio Jequitinhonha Valley, Minas Gerais State (Fig. 1). We used binoculars to watch the birds and two mist nets along 8 h of ornithological survey in this area. The vegetation of this plateau is characterised by typical 'campo rupestre' where abound Bromeliaceae (*Encholirium* sp., *Tillandsia* sp., *Vriesea* sp.), Cactaceae (*Pilosocereus* sp.), Clusiaceae (*Kielmeyera* sp.), Ericaceae (*Agarista* sp.), Eriocaulaceae (*Paepalanthus* spp.), Melastomataceae (*Lavoisiera* sp., *Microlicia* sp., *Tibouchina* sp.), Orchidaceae (*Habenaria* spp., *Oncidium* sp., *Stenorrhynchos* sp.), Poaceae (*Chusquea* sp.), Velloziaceae (*Barbacenia* sp., *Vellozia* spp.), and Verbenaceae (*Stachytarpheta* spp.).

On 1 March 2000 we found a dead Cipó Canastero in one of our mist nets at 1,320 m elevation. The specimen was deposited in the Coleção Ornitológica do Departamento de Zoologia of the Universidade Federal de Minas Gerais (DZUFMG), Belo Horizonte, Minas Gerais State, under registration no. DZUFMG 2855. On the same day, we heard and observed three other individuals within an area of 450 m^2 around our campsite. One of them was foraging on the rocky outcrop among bushes of *Tibouchina* sp. Although we did not tape-record its vocalizations, their songs closely resembled those from the type-locality (see Vielliard 1995).

The bird collected at Campina do Bananal, a male, had brown iris, grey tarsi and black bill with grey on its base. The measurements taken are: mass 30.5 g, total length 186.0 mm, wing 70.0 mm, tail 95.0 mm, tarsus 27.1 mm, culmen 17.6 mm. These measurements are similar to those of the holotype deposited in 'Museu de Zoologia da Universidade de São Paulo', registration number MZUSP 73831. The type-specimen, another male, measures: wing 69.9 mm, tail 89.6 mm, tarsus 24.4 mm, culmen 19.5 mm. Some plumage features of these two specimens differ. The back of DZUFMG 2855 is dark grey, rather than dark greyish-brown in the holotype MZUSP 73831. Furthermore, the belly of the specimen from Botumirim is grey, while in the holotype it is greyish-brown, and the superciliary stripe of DZUFMG 2855 is more conspicuous and more greyish. The significance of this variation is unknown. Unfortunately the paratype is not deposited in a public collection and its access is more difficult. DZUFMG 2855 was a young bird, with 25% cranial ossification.

This record extends the Cipó Canastero's range *c.* 170 km to the north of its former known range (Fig. 1). It is possible that other populations of *A. luizae* will be found even further north, in the 'campos rupestres' of Serra do Barão and adjacent mountains in the municipality of Grão Mogol.

We could not assess if this population of *A. luizae* is under threat. We did not record the Shiny Cowbird *Molothrus bonariensis*, a possible brood-parasite according to Vielliard (1990) and Collar *et al.* (1992). Cattle-grazing occurs at Campina do Bananal, but the locality is not yet within the tourist route, although an incipient program of 'eco-tourism' had been started.

As the number of professional ornithologists and birdwatchers grows in Brazil, new localities for endemic and even new taxa are being discovered. For instance, from 1983 to 1998, 17 new bird species were described in Brazil. Of those, 14 species were found in localities close to densely populated parts of eastern Brazil (Vuilleumier *et al.* 1992, Raposo 1997, Sick 1997, Bornschein *et al.* 1998, Coelho & Silva 1998). Some of these recently found taxa have been sometimes assigned as threatened simply due to lack of information, as has happened with *A. luizae*. *A. luizae* is apparently endemic to the Espinhaço Range (Ridgely & Tudor 1994, Silva 1995, Sick 1997, Stattersfield *et al.* 1998), but these mountains have not been surveyed in a systematic way. More extensive studies of this species' geographical range and variation are needed to assess its true status.

Acknowledgements

We thank Genilson A. Ferreira for his collaboration with our field work in northern Minas Gerais State. Cássio S. Martins (Fundação Biodiversitas) and Andrei L. Roos (Universidade Federal de

TABLE 1

Localities of records of the Cipó Canastero *Asthenes luizae*.

Locality	*Municipality*	*Coordinates*	*Elevation*	*Source*
Alto da Boa Vista, Serra do Cipó (type-locality)	Santana do Riacho	19°17'S, 43°34'W	1,100 m	Vielliard (1990)
Serra do Cipó National Park	Jaboticatubas	19°23'S, 43°33'W	1,185-1,300 m	Andrade *et al.* (1998), Cordeiro *et al.* (1998)
Ribeirão do Campo waterfalls	Conceição do Mato Dentro	19°05'S, 43°33'W	1,100 m	Cordeiro *et al.* (1998)
Campo Alegre	Santana de Pirapama	18°48'S, 43°53'W	1,000 m	Cordeiro *et al.* (1998)
Capivari	Serro	18°26'S, 43°25'W	1,100 m	Cordeiro *et al.* (1998)
Campina do Bananal	Botumirim	16°51'S, 43°02'W	1,320 m	Present study

Minas Gerais) prepared the map. MFV is grateful to CAPES, WWF, and USAID for financial support during his master course. MR has a fellowship by the Brazilian Research Council (CNPq). The Laboratory of Ornithology of UFMG is supported by 'Vallourec-Mannesmann Florestal', 'Fundação O Boticário de Proteção à Natureza' and PRPq-UFMG. We are indebted to Luís F. Silveira for enabling us to study the holotype at the Museu de Zoologia da Universidade de São Paulo.

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The nomenclature and past history in Britain of the Bean and Pink-footed Geese

by W.R.P. Bourne

Received 8 November 2000

Witherby (1939: 193) stated in footnotes under the Bean Goose that "Latham's (1787) description (of *Anser fabalis*), which is taken from Pennant (1776)... fits the Pink-footed Goose (*A. brachyrhynchus*) rather better than the Bean Goose. It was not, however, until many years afterwards that it was realised that there were two kinds of 'Bean' Geese, and the name *fabalis* had better be retained for the bird we now call the Bean Goose...". Then, under the Pinkfoot (p. 198), "although early records are doubtful owing to the great confusion which existed between this and the Bean Goose (persisting long after the two were differentiated), there can be no doubt that the Pink-footed Goose has increased very considerably in this country". This gives rise to problems with both the nomenclature and past distribution of the birds.

Nomenclature

Coombes (1947) observed that most of the early accounts of the Bean Goose, before the description of the Pink-foot (Baillon 1833), are ambiguous and suggested that, as the birds described were usually rather small, they may often have been the latter. As a result, there was debate over the Bean Goose's correct scientific name (Bannerman 1957). Nobody appears to have noticed that the ambiguous original account of the Bean Goose by Pennant (1776), quoted by Latham (1787) in his description of *A. fabalis* (renamed *A. segetum* by Gmelin 1789), included a figure of a Taiga Bean Goose (currently usually called *A. f. fabilis*) with a long, slender bill (Fig. 1), and so its identity should present no problem.

Distribution

The past distribution of the grey geese continues, however, to present a problem. As late as 1834, Selby (1835) still misidentified apparently numerous breeding Greylags *A. anser* in Sutherland as Bean Geese. Shortly afterwards Bartlett (1839) stated that the Greylag was the scarcest species in England, listed the Whitefront *A. albifrons* and Bean, and first reported a dozen Pinkfeet from markets (which would not be accepted as evidence for the occurrence of a new British species now!). It was thought at first only to occur in small numbers among abundant Bean Geese. The first good account of grey geese in the field in Yorkshire by Arthur Strickland (1858) indicated otherwise. He reported that the Greylag was formerly resident, and the Whitefront an occasional hard-weather visitor, and continued (his italics):-

> "from time immemorial, one of the features of the north and east of England has been the regular appearance of flocks of wild geese, which arrive every

autumn... at the time of bean harvest and when the bean stubbles were ready for them... *This species is the only one that has any claim to the name of Bean Goose* (or *segetum*), the *only* migratory species in this country, and the *only common and abundant* species that we have... Some years ago Mr Bartlett, struck by the obvious difference between the geese he met with in the markets and the descriptions and drawings given of the Bean Goose... was induced to institute a new species, under the name of the Pink-footed Goose... this was... the young of the true Bean Goose... distinguished by its short and strong bill- its depth at the base being nearly two-thirds of its length- and by its migratory habits- differing in that respect from all our other geese, arriving periodically every autumn, spreading during the day-time over the stubbles and clover-fields of the wolds and other open districts, arising like clock-work in the evening, and winging their way in long strings to the sand-banks of the Humber and other safe retreats for the night..."

He then went on to describe and name *Anser paludosus*

"The Long-billed Goose, figured and described by Mr Yarrell, Mr Gould and Mr Morris under the name of *segetum* or Bean Goose. This is distinguished by having the bill exactly twice the length of the depth at the base... Before the beginning of this (the 19th) century, when the carrs of Yorkshire were the resort of countless multitudes and numerous species of wildfowl... it was

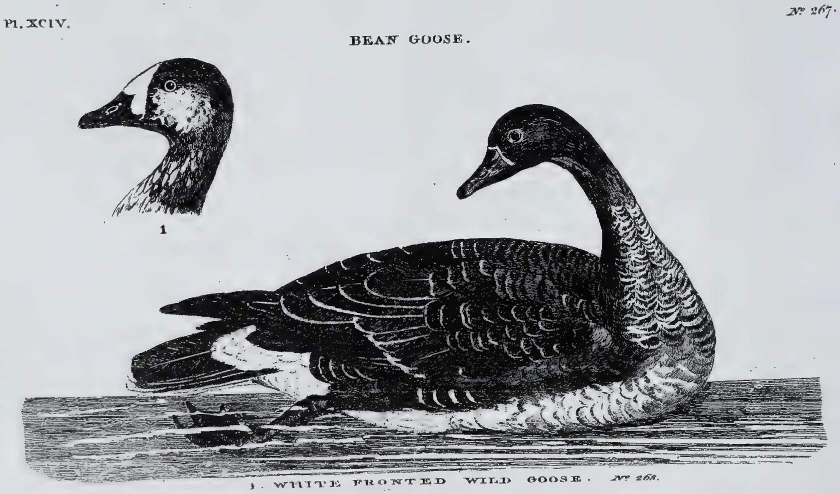
Pl. XCIV.
BEAN GOOSE.
No 267.
1
1. WHITE FRONTED WILD GOOSE. No 268.

Figure 1. Figure accompanying Pennant's (1776) original description of the Bean Goose. It appears a big bird with long extremities, notably the long, slender bill with indistinct Taiga Bean Goose type markings, and its head no darker than the back. This contrasts with the small, compact form of the Pink-footed Goose with a short, heavily-marked bill and the head darker than the back.

> stated there were two species of geese frequenting and breeding in the carrs, known by (the decoy-men, fowlers and carr-men) by the name of the Grey-lag and the Carr-lag... What the Carr-lag was it seems impossible now to demonstrate; but I have every reason to think it was this Long-billed Goose... distinguished from the Short-billed or Bean Goose by its entirely different habits."

Conclusion

East Anglian Anglo-Saxon archaeological remains include bones of Grey-lag and probably also Pinkfeet and Whitefronted Geese (Clutton-Brock 1976), which were apparently already a pest (Kear 2001). There are now few bird skins left in Britain from before the introduction of arsenical preservatives in the 1830s. It is notable, however, that the oldest goose of the Bean group traced, No. 2569 in the Strickland Collection at Cambridge (Salvin 1882), procured by Arthur's cousin Hugh (Jardine 1858) in Worcestershire in January 1838, and originally labelled, like most 19th century British specimens of both Bean and Pinkfooted, and sometimes Greylag geese, *Anser segetum*, is a Pinkfoot (wing 433, exposed culmen 51, tarsus 75 mm).

It is debatable what the Carr-lag Goose was. Mitchell (1885) identified the Skergrys or Scargrasse as the Water Rail *Rallus aquaticus*, and Newton (1896) the Carr-goose as the Great-crested Grebe *Podiceps cristatus*. But there seems no reason to question Strickland's identification of the innumerable "Bean Geese" that had passed through Scotland (Bourne & Ralph 2000) to winter in north-east England in force since "time immemorial" as Pinkfeet, or doubt his report that the Taiga Bean Goose *A. (f.) fabalis* may once have bred but was already, by the 1850s, "one of our scarcest British birds".

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Gender agreement of avian species names

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Despite propositions to the contrary, the new edition of the International Code of Zoological Nomenclature has reaffirmed the long-standing usage of gender agreement between Latin or latinized adjectival species-group names and the genus name with which they are combined (ICZN 1999: xxvi). Although the usefulness of the gender agreement convention can be questioned, proper adherence to the convention is important once it has been accepted. In this era of computerized databases, it is increasingly useful that the spelling of scientific names be standardized, especially since names differing by only one or two letters may designate altogether different taxa.

Nevertheless, different spellings of the same name are often encountered, when obviously only one is correct (see Appendix). The present contribution itemises recurrent misspellings and misinterpretations of gender agreement in major ornithological references. Our objective is not only to correct these misspellings, but also to stress how similar cases should be addressed when they arise. Indeed, new name combinations are likely to continue to appear as the systematic position of more and more taxa is being re-examined using biochemical techniques. Even though the wording of the ICZN Code is usually straightforward, its implementation is not necessarily simple and often requires a thorough, step-by-step approach. For the most part, the ICZN requirements are certainly no more overwhelming than the grammatical requirements of any modern language.

Surprisingly, although gender agreement might be perceived by some as an unnecessary requirement, we have found as many names where the ending was needlessly modified as we have found names where the required modification was not or was wrongly effected. Misspellings of species-group names are almost always explained by a misidentification of the nature of the words: Latin and latinized adjectives —which are variable— are confused with Latin nouns, modified Latin nouns, latinized nouns, and words that are neither Latin nor latinized —all of which are invariable (see definition of these terms under the heading of each section below). In this context, a proper understanding of latinization, as opposed to transliteration, is thus of great importance (see ICZN 1985, Appendix B). Note, for that matter, that Greek words quoted in the text are followed by both their transliteration and their definition [in brackets].

The present paper is arranged in sections that are hinged on the central question one must ask when implementing gender agreement: does the species-group name end in a Latin adjective, Latin adjectival suffix or latinized adjective? If so, it must agree in gender with the current generic name. In all other cases the original spelling must be maintained. A few Latin names, however, can be both nouns and adjectives; in such instances, usage determines how they should be treated (ICZN 1999, Art. 31.2.2); these names are not addressed here.

What we believe to be the proper spelling of the specific and subspecific names covered in this paper is indicated in the Appendix, along with a survey of which of the major world checklists used this correct spelling (this information is not repeated in the text). The starting point of our survey is the landmark *Check-list of birds of the world* by J.L. Peters and successors (Peters 1931-1986); all original combinations are taken from this work. The works of Wolters (1982), Howard & Moore (1994), del Hoyo *et al.* (1992-1999) and Clements (2000) are included as well, as they are the only recent publications to provide complete listings of bird subspecies on a world-wide basis. Because of its many departures from Peters's Check-list, the list of Sibley & Monroe (1990) is also included here despite the fact that it covers subspecies only partially. Although a few cases may have escaped our attention, we believe that our survey includes most of the recurrent misspellings found in the ornithological literature. Note, however, that many erroneous gender combinations found only in Howard & Moore (1994) and Clements (2000) are not listed here.

In each section of the present text, names are grouped as follows: 1) correct original names whose endings have been needlessly modified; 2) names that require a change of ending as a result of a change in generic combination; and 3) incorrect original names that require mandatory change according to ICZN (1999, Art. 32.3, 34.2). Within each group, the specific/subspecific names under consideration are sorted alphabetically; in the case of compound words, the alphabetical order is generally that of the last component. However, the alphabetical sequence has sometimes been modified in order to group similar explanations together.

Latin and latinized adjectives

Names that are or that end in Latin or latinized adjectives and participles must agree in gender with the generic name with which they are combined (ICZN 1999, Art. 31.2), and it is even mandatory to change the original gender ending of such names, if incorrect (ICZN 1999, Art. 32.3, 34.2).

A) LATIN ADJECTIVES AND PARTICIPLES

The following names are adjectives or participles of ancient and mediaeval Latin (Lewis & Short 1879; Glare 1982; ICZN 1999, Glossary: Latin), or are correctly formed when a Latin adjectival suffix is added to a Latin word [for a list of Latin adjectival suffixes, see e.g. Woods (1944: xii), Stearn (1966: 307-309)]. Therefore:

1. ***Cardinalis cardinalis flammiger*** Peters, 1913, must remain as is, and should not be changed to *C. c. flammigerus*. There is no justification here for modifying the correct masculine ending of a classical Latin adjective.
2. ***Chlorostilbon stenurus ignotus*** Todd, 1942, must remain as is, and should not be changed to *C. s. ignota. Chlorostilbon* is masculine (ICZN 1999, Art. 30.1.2). For the treatment of *stenurus,* see # 100 below.
3. ***Melocichla mentalis incana*** Diesselhorst, 1959, must remain as is, and should not be changed to *M. m. incanus.*
4. ***Bonasa umbellus mediana*** Todd, 1940, must remain as is, and should not be changed to *B. u. medianus.* The name *umbellus,* however, is not an adjective, but a modified Latin noun, and is invariable (see Section K below).
5. ***Malacocincla abbotti obscurior*** Deignan, 1948, must remain as is, and should not be changed to *M. a. obscurius.* However, the combination *Trichastoma a. obscurius* [as per Peters (1964)] is spelt correctly since *Trichastoma* is neuter (ICZN 1999, Art. 30.1.2) and since *obscurius* is the neuter form of *obscurior* (masculine and feminine).
6. *Cinnyris habessinicus alter* Neumann, 1906, must be spelt ***Nectarinia habessinica altera****,* not *N. h. alter.* The feminine form of the Latin adjective *alter* is *altera.*
7. *Heteroprion desolatus alter* Mathews, 1912, must be spelt ***Pachyptila desolata altera***, not *P. d. alter.* The feminine form of the Latin adjective *alter* is *altera.*
8. *Ammospiza caudacuta altera* Todd, 1938, must be spelt ***Ammodramus caudacutus alter*** or ***Ammodramus nelsoni alter****,* not *Ammodramus c. alterus* or *Ammodramus n. alterus.* The masculine form of the Latin adjective *altera* is *alter.*
9. *Todirostrum capitale* Sclater, 1857 must be spelt ***Poecilotriccus capitalis****,* not *P. capitale.* The masculine form of the neuter adjective *capitale* is *capitalis.*
10. *Cyanolesbia caudata* Berlepsch, 1892, must be spelt ***Aglaiocercus kingi caudatus****,* not *A. k. caudata.* The adjective *caudata* is derived from the Latin noun *cauda* [tail], to which the adjectival suffix *-atus* (*-a, -um*) was added.
11. *Dolerisca cervina* Gould, 1861, must be spelt ***Leucippus fallax cervinus****,* not *L. f. cervina.*
12. *Lophortyx californica decolorata* van Rossem, 1946, must be spelt ***Callipepla californica decolorata****,* not *C. c. decoloratus.*

13. *Erythrina rubicilla diabolica* Koelz, 1939, must be spelt ***Carpodacus rubicilla diabolicus,*** not *C. r. diabolica.* The name *rubicilla,* however, is not an adjective but a noun phrase, and must remain unchanged (ICZN 1999, Art. 31.2.1, Glossary: noun phrase; see Section I below).
14. *Malacocincla fulvescens dilutior* White, 1953, must be spelt ***Illadopsis fulvescens dilutior,*** not *I. f. dilutius.* However, the combination *Trichastoma f. dilutius* [as per Peters (1964)] is spelt correctly since *Trichastoma* is neuter (ICZN 1999, Art. 30.1.2) and since *dilutius* is the neuter form of *dilutior* (masculine and feminine).
15. *Sterna emigrata* Neumann, 1934, must be spelt ***Thalasseus bengalensis emigratus,*** not *T. b. emigrata.*
16. *M*[*uscicapa*] *forficata* Gmelin, 1789, must be spelt ***Tyrannus forficatus,*** not *T. forficata.* The adjective *forficata* is derived from the Latin noun *forfex, -icis* [scissors], to which the adjectival suffix *-atus* (*-a, -um*) was added.
17. *Tringa Fulicaria* Linnaeus, 1758, must be spelt ***Phalaropus fulicarius,*** not *P. fulicaria.* The adjective *fulicaria* is derived from the Latin noun *fulica* [coot], to which the adjectival suffix *-arius* (*-a, -um*) was added. See David & Gosselin (2000) for a detailed explanation of this case.
18. *Hylocichla fuscescens fuliginosa* Howe, 1900, must be spelt ***Catharus fuscescens fuliginosus,*** not *C. f. fuliginosa.*
19. *Fringilla granatina* Linnaeus, 1766, must be spelt ***Uraeginthus granatinus*** [as per e.g. Dowsett & Forbes-Watson (1993)], not *U. granatina.* The adjective *granatina* is derived from the Latin noun *granatum, -i* [garnet, pomegranate], to which the adjectival suffix *-inus* (*-a, -um*) was added, in reference to the red cheek colour of the bird.
20. *Crypturornis hynochracea* Miranda-Ribeiro, 1938, must be spelt ***Crypturellus obsoletus hypochraceus,*** not *C. o. hypochracea.* The emended name *hypochraceus* ends in the Latin noun *ochra,* to which the Latin adjectival suffix *-aceus* (*-a, -um*) was added. The situation is perfectly analogous to *Drymophila devillei subochraceus* Chapman, 1921, now corrected to *Drymophila devillei subochracea* [as per e.g. Peters (1951)].
21. *Taccocua infuscata* Blyth, 1845, must be spelt ***Phaenicophaeus leschenaultii infuscatus,*** not *P. l. infuscata.*
22. *Megaloprepia magnifica interposita* Hartert, 1930, must be spelt ***Ptilinopus magnificus interpositus,*** not *P. m. interposita.*
23. *Ateleodacnis bicolor minor* Hellmayr, 1935, must be spelt ***Conirostrum bicolor minus,*** not *C. b. minor.* The neuter form of *minor* (masculine and feminine) is *minus.*
24. *Prionirhynchus platyrhynchus minor* Hartert, 1898, must be spelt ***Electron platyrhynchum minus,*** not *E. p. minor.* The neuter form of *minor* (masculine and feminine) is *minus.*
25. *Saxicola Alboniger* Hume, 1872, must be spelt ***Oenanthe albonigra*** [as per e.g. Blanford & Dresser (1874)], not *O. alboniger.* The word *alboniger* is a compound

Latin adjective that ends in the classical adjective *niger,* and is variable. All species-group names in Hume's article have initial capital letters, thus this typographical particularity has no significance here [see also David & Gosselin (2000)]. It must be noted that *Saxicola alboniger* is the correct original spelling since *Saxicola* Bechstein, 1803, is masculine, having been established only in combination with three nouns in apposition (ICZN 1999, Art. 30.1.4.2; David & Gosselin unpublished).

26. *Munia rubroniger* Hodgson, 1836, must be spelt ***Lonchura malacca rubronigra***, not *L. m. rubroniger*. The word *rubroniger* is a compound Latin adjective that ends in the classical adjective *niger,* and is variable. *Munia* Hodgson, 1836, however, is masculine because it was originally established in combination with a masculine adjective (ICZN 1999, Art. 30.2.3). See also # 25 above.
27. *Poecilodryas nitida* De Vis, 1897, must be spelt ***Monarcha chrysomela nitidus***, not *M. c. nitida. Monarcha* is masculine (ICZN 1999, Art. 30.1.1). The name *chrysomela,* however, is invariable because it does not end in a Latin or latinized adjective (ICZN 1999, Art. 31.2.3 Example).
28. *Synoecus plumbeus* Salvadori, 1894, must be spelt ***Coturnix ypsilophora plumbea***, not *C. y. plumbeus. Coturnix* is feminine (ICZN 1999, Art. 30.1.1).
29. *Philippinia primigenius* Hachisuka, 1941, must be spelt ***Aethopyga primigenia***, not *A. primigenius. Philippinia* Hachisuka, 1941, however, is masculine because it was originally established in combination with a masculine adjective (ICZN 1999, Art. 30.2.3).
30. *Granatina granatina retusa* Clancey, 1961, must be spelt ***Uraeginthus granatinus retusus***, not *U. g. retusa.* For the treatment of *granatinus,* see # 19 above.
31. *Erythrina edwardsii rubicunda* Greenway, 1933, must be spelt ***Carpodacus edwardsii rubicundus***, not *C. e. rubicunda.* However, the combination *Procarduelis e. rubicunda* is spelt correctly [as per Wolters (1982)] since *Procarduelis* is feminine (ICZN 1999, Art. 30.1.1).
32. *Brachypteryx sepiaria* Horsfield, 1821, must be spelt ***Malacocincla sepiaria***, not *M. sepiarium.* The adjective *sepiaria* is derived from the Latin noun *sepes, -is* [hedge], to which the adjectival suffix *-arius* (*-a, -um*) was added. The combination *Trichastoma sepiarium* [as per Peters (1964)] however, is spelt correctly since *Trichastoma* is neuter (ICZN 1999, Art. 30.1.2).
33. *Granatina granatina siccata* Clancey, 1959, must be spelt ***Uraeginthus granatinus siccatus***, not *U. g. siccata.* For the treatment of *granatinus,* see # 19 above.
34. *Alcedo tuta* Gmelin, 1788, must be spelt ***Todiramphus tutus***, not *T. tuta.* The combination *Halcyon tuta,* however, is spelt correctly since *Halcyon* is feminine.
35. *Horeites brunnifrons umbraticus* Stuart Baker, 1924, must be spelt ***Cettia brunnifrons umbratica***, not *C. b. umbraticus.*

36. *Urubitinga anthracina cancrivora* Clark, 1905, must be spelt ***Buteogallus anthracinus cancrivorus***, not *B. a. cancrivora.* The adjective *cancrivora* [crab-eating] is derived from the verb *vorare* [to eat], on the model of the classical Latin adjectives *carnivorus* (*-a, -um*), and *omnivorus* (*-a, -um*). Other names derived from *vorare* are also adjectival, e.g. *Halcyon senegalensis ranivorus* Meinertzhagen, 1924, now corrected to *H. senegaloides ranivora* [as per Peters (1945), etc.].
37. *Graucalus macei larvivorus* Hartert, 1910, must be spelt ***Coracina novaehollandiae larvivora***, not *C. n. larvivorus.* See # 36 above.
38. *Pampusanna criniger* Pucheran, 1853, must be spelt ***Gallicolumba crinigera***, not *G. criniger.* The word *criniger* is a classical Latin adjective, not a noun. The fact that *Criniger* has been used as a masculine genus-group name (ICZN 1999, Art. 30.1.1) does not change the adjectival nature of Pucheran's *criniger* in the present case because modern Latin is not part of the definition of Latin by ICZN (1999, Glossary: Latin). Whereas Art. 31.2.2 of ICZN (1999) applies to classical Latin words that are both nouns and adjectives, and to newly derived names (e.g. *phobifer*) that can be viewed as nouns or adjectives, *criniger* is only an adjective and is variable (ICZN 1999, Art. 31.2). The adjectival nature of *criniger* was recognized in the subspecific names *Phlegoenas crinigera leytensis* Hartert, 1918, and *Phlegoenas crinigera basilanica* Hartert, 1918. Note that *Pampusanna* Pucheran, 1853, is masculine because it was originally established in combination with a masculine adjective (Jacquinot 1855; ICZN 1999, Art. 30.2.3).
39. *Irena criniger* Sharpe, 1857, must be corrected to *Irena crinigera,* and the present correct spelling is ***Irena puella crinigera***, not *I. p. criniger.* See # 38 above.
40. *Suya criniger* Hodgson, 1836, spelt ***Prinia crinigera***, not *P. criniger.* See # 38 above. *Suya* Hodgson, 1836, is masculine (ICZN 1999, Art. 30.2.3).
41. *Paramythia montium alpinum* Salomonsen, 1961, must be corrected to ***Paramythia montium alpina***. *Paramythia* is feminine (ICZN 1999, Art. 30.1.2). The word *montium* [of the mountains], however, is not an adjective, but a noun in the genitive case that must remain unchanged (ICZN 1999, Art. 31.2.1).
42. *Ortalis ruficrissa baliolus* Osgood & Conover, 1922, must be corrected to *Ortalis ruficrissa baliola,* and the present correct spelling is ***Ortalis ruficauda baliola***. *Ortalis* is feminine (ICZN 1999, Art. 30.1.2).
43. *Bonasa umbellus castaneus* Aldrich & Friedmann, 1943, must be corrected to ***Bonasa umbellus castanea.*** See also # 4 above.
44. *Tyto capensis libratus* Peters & Loveridge, 1935, must be corrected to ***Tyto capensis librata.*** *Tyto* is feminine (ICZN 1999, Art. 30.1.2).
45. *Apaloderma narina littoralis* van Someren, 1931, must be corrected to ***Apaloderma narina littorale.*** *Apaloderma* is neuter (ICZN 1999, Art. 30.1.2). The name *narina,* however, is a Hottentot word and is invariable (Jobling 1991; ICZN 1999, Art. 31.2.3).
46. *Neochelidon tibialis minimus* Chapman, 1924, must be corrected to ***Neochelidon tibialis minima.*** *Neochelidon* is feminine (ICZN 1999, Art. 30.1.2).

47. *Pipra leucocilla minimus* Chapman, 1917, must be corrected to *Pipra leucocilla minima*, and the present correct spelling is ***Pipra pipra minima,*** not *P. p. minimus.*
48. *Leptotila plumbeiceps notius* Peters, 1931, must be corrected to ***Leptotila plumbeiceps notia.***
49. *Paramythia montium olivaceum* Van Oort, 1910, must be corrected ***Paramythia montium olivacea.*** *Paramythia* is feminine (ICZN 1999, Art. 30.1.2). See also # 41 above.
50. *Emblema picta* Gould, 1842, must be corrected to ***Emblema pictum.*** *Emblema* is neuter (ICZN 1999, Art. 30.1.1).
51. *Monarcha chrysomela pulcherrima* Salomonsen, 1964, must be corrected to ***Monarcha chrysomela pulcherrimus.*** It is also known as *Carterornis c. pulcherrimus* [as per Wolters (1982)]. *Monarcha* is masculine (ICZN 1999, Art. 30.1.1). The name *chrysomela,* however, is invariable because it does not end in a Latin or latinized adjective (ICZN 1999, Art. 31.2.3 Example).
52. *Todirostrum chrysocrotaphum similis* Zimmer, 1940, must be corrected to ***Todirostrum chrysocrotaphum simile.***
53. *Parisoma layardi subsolana* Clancey, 1963, must be corrected to ***Parisoma layardi subsolanum.*** *Parisoma* is neuter (ICZN 1999, Art. 30.1.2).
54. *Scaeophaethon rubricauda roseotincta* Mathews, 1926, must be corrected to *Scaeophaethon rubricauda roseotinctus,* and the present correct spelling is ***Phaethon rubricauda roseotinctus***, not *P. r. roseotincta. Phaethon* is masculine (ICZN 1999, Art. 30.1.1). The word *roseotincta* is a compound Latin adjective that ends in the classical adjective *tinctus* (*-a, -um*), and is variable (see also # 25 above). The word *rubricauda,* however, is a noun phrase, and must remain unchanged (ICZN 1999, Art. 31.2.1, Glossary: noun phrase; see Section I below).
55. *Stactolaema whytii terminatum* Clancey, 1956, must be corrected to ***Stactolaema whytii terminata.*** It is also known as *Gymnobucco w. terminatus* [as per Wolters (1982)]. *Stactolaema* is feminine (ICZN 1999, Art. 30.1.3).
56. *Chalcostigma stanleyi versigularis* Zimmer, 1924, must be corrected to ***Chalcostigma stanleyi versigulare.*** *Chalcostigma* is neuter (ICZN 1999, Art. 30.1.2). The compound adjective *versigularis* is derived from the Latin words *versus* [changing] and *gula* [throat], to which the adjectival suffix *-aris* (*-is, -e*) was added.

B) LATINIZED WORDS ENDING IN A LATIN ADJECTIVAL SUFFIX

A "latinized" word is a word that is not Latin and to which "Latin form and characteristics (including a Latin ending or a Latin suffix)" were given (ICZN 1999, Glossary: latinize). The mere addition of a Latin adjectival suffix can turn most non-Latin words into latinized adjectives [for a list of Latin adjectival suffixes, see e.g. Woods (1944: xii), Stearn (1966: 307-309)]. For example, a great many geographical names (*mexicana, venezuelanus,* etc.) end in the Latin adjectival suffix *-anus* (*-a, -um*). Latinized adjectives must always agree in gender with the generic name with which they are combined (ICZN 1999, Art. 31.2), and it is even mandatory to change the original gender ending of such names, if incorrect (ICZN 1999, Art. 32.3, 34.2). The etymologies of most of the names below are given by Jobling (1991), and the initial capital letter in some of these names does not alter their adjectival nature [see David & Gosselin (2000)]. Therefore:

57. *Pavo malacensis* Scopoli, 1786, must be spelt ***Polyplectron malacense,*** not *Polyplectron malacensis. Polyplectron* is neuter (ICZN 1999, Art. 30.1.2).
58. *Ieracidea berigora tasmanica* Mathews, 1916, must be spelt ***Falco berigora tasmanicus,*** not *F. b. tasmanica. Falco* is masculine (ICZN 1999, Art. 30.1.1). The name *berigora,* however, is an Australian aboriginal word and is invariable (Jobling 1991; ICZN 1999, Art. 31.2.3).
59. *Syrnium albitarse* Bonaparte, 1850, must be spelt ***Strix albitarsis*** or ***Ciccaba albitarsis,*** not *Strix albitarsus* or *C. albitarsus.* The adjectival name *albitarsis* (*-is, -e*) is formed from the Latin adjective *albus* (*-a, -um*) and the stem of the latinized Greek noun ταρσος [tarsos: foot], to which was added the Latin adjectival suffix *-is* (*-is, -e*) (Glare 1982: 970, under the suffix *-is*). To change *albitarse* to *albitarsus* would turn a variable adjective into an invariable noun phrase that ends in a latinized noun.
60. *Pipromorpha turi maynana* Stolzmann, 1926, must be spelt ***Mionectes oleagineus maynanus,*** not *M. o. maynana. Mionectes* is masculine (ICZN 1999, Art. 30.1.4.2).
61. *Strix Sumatrana* Raffles, 1822, must be spelt ***Bubo sumatranus,*** not *B. sumatrana.*
62. *Nesillas aldabranus* Benson & Penny, 1968, must be corrected to ***Nesillas aldabrana***. *Nesillas* is feminine (ICZN 1999, Art. 30.1.2).
63. *Neocrex columbianus* Bangs, 1898, must be corrected to ***Neocrex columbiana***, also known as *Porzana columbiana. Neocrex* is feminine, as are *Crex, Gallicrex,* and *Megacrex* (ICZN 1999, Art. 30.1.2).
64. *Ptilopus viridis Geelvinkiana* Schlegel, 1871, must be corrected to ***Ptilinopus viridis geelvinckianus***.
65. *B*[*ubo*] *Hemachalana* Hume, 1873, must be corrected to *Bubo hemachalanus*, and the present correct spelling is ***Bubo bubo hemachalanus***. *Bubo* is masculine (ICZN 1999, Art. 30.1.1). The adjective *hemachalana* is derived from Himachal [Pradesh], with the addition of the Latin adjectival suffix *-anus* (*-a, -um*).
66. *Picus jumana* Spix, 1824, must be corrected to *Picus jumanus,* and the present correct spelling is ***Celeus elegans jumanus,*** not *C. e. jumana*.
67. *Crypturus tataupa peruviana* Cory, 1915, must be corrected to *Crypturus tataupa peruvianus,* and the present correct spelling is ***Crypturellus tataupa peruvianus.*** The name *tataupa,* however, is a Guarani word and is thus invariable (Jobling 1991; ICZN 1999, Art. 31.2.3).
68. *Clytorhynchus vitiensis vatuana* Mayr, 1933, must be corrected to ***Clytorhynchus vitiensis vatuanus.*** As given by Mayr (1933), the adjective *vatuana* comes from

the name Vatu (Vatu Vara, of Fiji), to which the adjectival Latin suffix *-anus* (*-a, -um*) was added.

C) LATINIZED GREEK ADJECTIVES

The following names are or end in classical Greek adjectives (Liddell & Scott 1996). Once latinized, such names must agree in gender with the generic name with which they are combined (ICZN 1999, Art. 31.2), and it is even mandatory to change the original gender ending of these names, if incorrect (ICZN 1999, Art. 32.3, 34.2) [see ICZN (1999, Glossary; 1985, Appendix B) for a definition of latinize vs. transliterate]. Therefore:

69. *Cerchneis moluccensis microbalia* Oberholser, 1919, must be spelt ***Falco moluccensis microbalius,*** not *F. m. microbalia. Falco* is masculine (ICZN 1999, Art. 30.1.1). The final component *-balia* is the latinized adjective βαλιος [balios: spotted].
70. *Psittacus chrysostomus* Kuhl, 1820 must be spelt ***Neophema chrysostoma,*** not *N. chrysostomus.* The name *chrysostomus* is the latinized Greek adjective χρυσοστομος [chrusostomos: golden-mouthed]. For the treatment of names originally ending in *-stoma,* however, see # 206 below.
71. *Buceros cylindricus* Temminck, 1831, must be spelt ***Ceratogymna cylindrica,*** not *C. cylindricus.* The name *cylindricus* is the latinized Greek adjective κυλινδρικος [kulindrikos: cylindrical].
72. *Buceros subcylindricus* Sclater, 1870, must be spelt ***Ceratogymna subcylindrica,*** not *C. subcylindricus.* See # 71 above.
73. *Poecile hypermelaena* Berezowski & Bianchi, 1891, must be spelt ***Parus palustris hypermelaenus,*** not *Parus p. hypermelaena.* The final component *-melaena* is the latinization of μελαινα [melaina: black], the very example of a variable latinized adjective quoted by ICZN (1999, Art. 31.2.3).
74. *Rallina poeciloptera* Hartlaub, 1866, must be spelt ***Nesoclopeus poecilopterus,*** not *N. poeciloptera.* The name *poeciloptera* is the latinized Greek adjective ποικιλοπτερος [poikilopteros: spotted-winged].
75. *Cepphus columba adianta* Storer, 1950, must be corrected to ***Cepphus columba adiantus.*** As indicated by Storer (1950) himself, the name *adianta* is the latinized Greek adjective αδιαντος [adiantos: unwetted]. The name *columba,* however, is a Latin noun and is invariable (ICZN 1999, Art. 31.2.1).
76. *Macropteryx leucophaeus* Peale, 1848, must be corrected to *Macropteryx leucophaea,* and the present correct spellings are *Aerodramus leucophaeus* [as per Howard & Moore (1994), etc.] or ***Collocalia leucophaea,*** not *C. leucophaeus. Macropteryx* is feminine (ICZN 1999, Art. 30.1.2). Whitout further explanations, Sibley & Monroe (1990: 136) stated that *leucophaeus* in the original description is in "noun form", but *leucophaeus* can only be the latinized Greek adjective λευκοφαιος [leucophaios: ashy-grey] (Liddell & Scott 1996).
77. *Hirundo leucosternus* Gould, 1841, must be corrected to *Hirundo leucosterna,* and the present correct spelling is ***Cheramoeca leucosterna*** [not *C.*

leucosternum as in Peters (1960), or *C. leucosternus* as in Turner & Rose (1989)]. Whitout further explanations, Sibley & Monroe (1990: 575) and Christidis & Boles (1994: 75) also used *C. leucosternus,* stating incorrectly that the name is a noun in apposition. Gould's *leucosternus* (one of his many idiosyncratic gender combinations —see also # 50 above, and # 84, 102, 104 and 110 below) is simply the latinized Greek adjective λευκοστερνος [leukosternos: white-chested] (Liddell & Scott 1996). Although the Greek leukosternos is masculine and feminine, the Latinized version *leucosternus* is only masculine (ICZN 1999, Art. 31.2.3 Example).

78. *Platycercus melanoptera* North, 1906, must be corrected to *Platycercus melanopterus,* and the present correct spelling is ***Platycercus elegans melanopterus****,* not *P. e. melanoptera.* The name *melanoptera* is the latinized Greek adjective μελανοπτερος [melanopteros: black-winged].

D) LATINIZED ADJECTIVES DERIVED FROM GREEK

Greek adjectives are commonly formed by the union of an adjectival stem and a noun, followed by a variable ending (e.g. -ος [-os] masculine or feminine, -ον [-on] neuter). For example, classical Greek adjectives such as λευκοστερνος [leukosternos: white-chested] and λευκοκερκος [leukokerkos: white-tailed] are respectively derived from στερνον [sternon: chest] and κερκος [kerkos: tail]. Adjectives formed in a similar fashion (e.g. μελανοκεφαλος [melanokephalos: black-headed], μεγαρυγχος [megarugchos: large-billed], etc.), when latinized, account for the numerous *melanocephalus* (*-a, -um*), *megarhynchus* (*-a, -um*), etc., of the scientific nomenclature. They are mostly derived from the words listed in Table 1. Such adjectival species-group names must always agree in gender with the generic name with which they are combined, and it is even mandatory to change the original gender ending, if incorrect (ICZN 1999, Art. 31.2, 32.3, 34.2). Therefore:

79. *Pachycephala macrorhyncha* Strickland, 1849, must remain ***Pachycephala pectoralis macrorhyncha****,* and should not be changed to *P. p. macrorhynchus.* The name *macrorhyncha* is latinized from the Greek adjectival μακρορυγχος [makrorugchos: large-billed].
80. *Sterna eurygnatha* Saunders, 1876, must be spelt ***Thalasseus sandvicensis eurygnathus****,* not *T. s. eurygnatha.* The name *eurygnatha* is latinized from the Greek adjectival ευρυγναθος [eurugnathos: broad-jawed].
81. *Barbatula leucolaima* J. & E. Verreaux, 1851, must be spelt ***Pogoniulus bilineatus leucolaimus*** or ***Viridibucco bilineatus leucolaimus*** [not *P. b. leucolaima* as in Peters (1948), or *V. b. leucolaima* as in Wolters (1982), etc.]. In *leucolaima*, the -os ending has been latinized from the Greek adjectival λευκολαιμος [leukolaimos: white-throated], so the name qualifies as latinized (ICZN 1999, Glossary: latinize).
82. *Sylvia erythronota* Eversmann, 1841, must be spelt ***Phoenicurus erythronotus*** [as per Peters (1964), Snow & Perrins (1998), etc.] or *Dorisornis erythronotus*

[as per Wolters (1982)], not *Phoenicurus erythronota* [as in Sibley & Monroe (1990), etc.]. Sibley & Monroe (1990: 537) claimed that "capitalization of the species name in the original description (*Sylvia Erythronota* Eversmann, 1841) confirms treatment as a noun in apposition". However, their quote of Eversmann seems erroneous because the original spelling was all in uppercases (*SYLVIA ERYTHRONOTA*), as were all species headings in the section of Eversmann's account where *S. erythronota* was described (Dresser 1876). As shown elsewhere (David & Gosselin 2000), the presence of uppercases has no bearing on the nature of unequivocally adjectival species-group names. The name *erythronota* is latinized from the Greek adjectival ερυθρονωτος [eruthronotos: red-backed].

83. *Thryospiza maritima pelonota* Oberholser, 1931, must be spelt ***Ammodramus maritimus pelonotus***, not *A. m. pelonota.* The name *pelonota* is latinized from the Greek adjectival πελονωτος [pelonotos: dark-backed].
84. *Halcyon pyrrhopygia* Gould, 1840, must be spelt ***Todiramphus pyrrhopygius*** [as per Wolters (1982)], not *T. pyrrhopygia* [as in Sibley & Monroe (1990), Christidis & Boles (1994)]. There are over twenty-five avian species names that end in *-pygius* and *-pygia;* all are the latinization of adjectives formed on the pattern of genuine Greek adjectives such as μικρορροπυγιος [mikrorropugios: small-rumped]. These names are variable (e.g. *Taenioptera erythropygia* Sclater, 1853 [now *Cnemarchus erythropygius*]; *Graucalus leucopygius* Bonaparte, 1851 [now *Coracina leucopygia*]; etc.). Citing as examples *Halcyon incinctus* Gould, 1838, and *Halcyon sordidus* Gould, 1842, Sibley & Monroe (1993: 22) and Christidis & Boles (1994: 61) argued that Gould treated *Halcyon* as masculine, and that therefore the original name *pyrrhopygia* must be considered as a noun in apposition. But they failed to mention *Halcyon saurophaga* Gould, 1843, and therefore Gould's intentions remain indecisive, to say the least (see also # 77 above). In any case, this is irrelevant because *Halcyon* is indisputably feminine (ICZN 1999, Art. 30.1.1); moreover, the undisputed adjectival suffix -ιος [-ios: *-ius* (Woods 1944: xii)] in πυρροπυγιος [purropugios: red-rumped], correctly latinized in *pyrrhopygius* (*-a, -um*) leaves no doubt that we are dealing with an adjective.
85. *Macropteryx spodiopygius* Peale, 1848, must be corrected to *Macropteryx spodiopygia,* and the present correct spellings are *Aerodramus spodiopygius* [as per Howard & Moore (1994), etc.] or ***Collocalia spodiopygia*** [as per Peters (1940), Wolters (1982)], not *C. spodiopygius* [as in Sibley & Monroe (1990), Christidis & Boles (1994)]. *Macropteryx* is feminine (ICZN 1999, Art. 30.1.2). Here again, Sibley & Monroe (1990: 135) stated that *spodiopygius* in the original description is in "noun form", but the undisputed adjectival suffix –ιος [-ios: *-ius* (Woods 1944: xii)], in σποδιοπυγιος [spodiopugios: ashy-rumped], correctly latinized in *spodiopygius* (*-a, -um*), leaves no doubt that we are dealing with an adjective. See also # 84 above.

86. *Ateleodacnis leucogenys cyanochrous* Todd, 1924, must be corrected to *Ateleodacnis leucogenys cyanochroa,* and the present correct spelling is ***Conirostrum leucogenys cyanochroum,*** not *C. l. cyanochrous. Ateleodacnis* is feminine (ICZN 1999, Art. 30.1.2). The name *cyanochrous* is latinized from the Greek adjectival κυανοχροος [kuanochroos: blue-tinted]. For the treatment of names originally ending in *-chroa,* however, see # 206 below.
87. *Alario leucolaema* Sharpe, 1903, must be corrected to *Alario leucolaemus,* and the present correct spelling is ***Serinus leucolaemus*** [as per Dowsett & Forbes-Watson (1993)], not *S. leucolaema.* The name *leucolaema* is latinized from the Greek adjectival λευκολαιμος [leukolaimos: white-throated]. *Alario* Bonaparte, 1850, is masculine (Jobling 1991; ICZN 1999, Art. 30.1.4.5).
88. *Serinus xantholaema* Salvadori, 1896, must be corrected to ***Serinus xantholaemus*** [as per Dowsett & Dowsett-Lemaire (1993)]. The name *xantholaema* is latinized from the Greek adjectival ξανθολαιμος [xantholaimos: yellow-throated].
89. *Halcyon Amauropterus* Pearson, 1841, must be corrected to *Halcyon amauroptera*, also known as ***Pelargopsis amauroptera*** [as per Peters (1945), etc.]. The name *amauropterus* is latinized from the Greek adjectival αμαυροπτερος [amauropteros: dark-winged]. Sibley & Monroe (1990: 88) incorrectly used *Pelargopsis amauropterus,* stating (again) that capitalization of the species name in the original description indicates usage as a noun in apposition. This statement has no basis since all species-group names in Pearson (1841) have an initial capital letter, and since the noun form would have been *"amauropteryx"* or *"amauropteron"* (see Table 1).
90. *Jotreron melanospila* Salvadori, 1875, must be corrected to ***Jotreron melanospilus,*** or is to be spelt ***Ptilinopus melanospilus,*** not *P. melanospila.* The name *melanospila* is latinized from the Greek adjectival μελανοσπιλος [melanospilos: black-spotted]. *Jotreron* Bonaparte, 1854, ending in the transliterated (masculine and feminine) Greek adjective τρηρων [treron: shy], is masculine because it was not established in combination with a feminine adjective (ICZN 1999, Art. 30.1.4.2).
91. *Jotreron chrysorrhoa* Salvadori, 1875, must be corrected to *Jotreron chrysorrhous*, and the present correct spellings are ***Jotreron melanospilus chrysorrhous*** or ***Ptilinopus melanospilus chrysorrhous,*** not *J. m. chrysorrhoa* or *P. m. chrysorrhoa.* The name *chrysorrhoa* is latinized from the Greek adjectival χρυσορροος [chrusorroos: golden-vented]. For the gender of *Jotreron* and the treatment of *melanospilus,* see # 90 above.
92. *Jotreron xanthorrhoa* Salvadori, 1875, must be corrected to *Jotreron xanthorrhous*, and the present correct spellings are ***Jotreron melanospilus xanthorrhous*** or ***Ptilinopus melanospilus xanthorrhous,*** not *J. m. xanthorrhoa* or *P. m. xanthorrhoa.* The name *xanthorrhoa* is latinized from the Greek adjectival ξανθορροος [xanthorroos: yellow-vented]. For the gender of *Jotreron* and the treatment of *melanospilus,* see # 90 above.

TABLE 1

A selection of Greek nouns often used in compound species-group names, along with their transliterated and latinized versions and the corresponding masculine adjectival endings. Names are grouped by their Greek endings.

Greek noun / transliterated / latinized	– Adjectival ending / transliterated	– latinized: definition
μιτρα / mitra / *mitra*	–μιτρος / -mitros	*-mitrus* (*-a, -um*): -banded
ουρα / oura / *ura*	–ουρος / -ouros	*-urus* (*-a, -um*): -tailed
παρεια / pareia / *pareia*	–παρειος / -pareios	*-pareius* (*-a, -um*): -cheeked
πλευρα / pleura / *pleura**	–πλευρος / -pleuros	*-pleurus* (*-a, -um*): -sided
στιγμα / stigma / *stigma*	–στιγμος / -stigmos	*-stigmus* (*-a, -um*): -spotted
στομα / stoma / *stoma*	–στομος / -stomos	*-stomus* (*-a, -um*): -mouthed
σωμα / soma / *soma*	–σωμος / -somos	*-somus* (*-a, -um*): -bodied
χροα / chroa / *chroa*	–χροος / -chroos	*-chrous* (*-a, -um*): -tinted
χρωμα / chroma / *chroma*	–χρωμος / -chromos	*-chromus* (*-a, -um*): -coloured
κεφαλη / kephale / *cephala*	–κεφαλος / -kephalos	*-cephalus* (*-a, -um*): -headed
κορυφη / koruphe / *corypha*	–κορυφος / -koruphos	*-coryphus* (*-a, -um*): -headed
πυγη / puge / *pyga*	–πυγος / -pugos	*-pygus* (*-a, -um*): -rumped
γαστηρ / gaster / *gaster*	–γαστρος / -gastros	*-gastrus* (*-a, -um*): -bellied
ρις / ris / *rhis*	–ρρινος / -rrinos	*-rrhinus* (*-a, -um*): -nosed
μετωπον / metopon / *metopum*	–μετωπος / -metopos	*-metopus* (*-a, -um*): -fronted
πτερον / pteron / *pterum***	–πτερος / -pteros	*-pterus* (*-a, -um*): -winged
πτιλον / ptilon / *ptilum*	–πτιλος / -ptilos	*-ptilus* (*-a, -um*): -feathered
στερνον / sternon / *sternum*	–στερνος / -sternos	*-sternus* (*-a, -um*): -breasted
γναθος / gnathos / *gnathus*	–γναθος / -gnathos	*-gnathus* (*-a, -um*): -jawed
δακτυλος / daktulos / *dactylus*	–δακτυλος / -daktulos	*-dactylus* (*-a, -um*): -toed
κερκος / kerkos / *cercus*	–κερκος / -kerkos	*-cercus* (*-a, -um*): -tailed
κυκλος / kuklos / *cyclus*	–κυκλος / -kuklos	*-cyclus* (*-a, -um*): -ringed
λαιμος / laimos / *laemus*	–λαιμος / -laimos	*-laemus* (*-a, -um*): -chested
λοφος / lophos / *lophus*	–λοφος / -lophos	*-lophus* (*-a, -um*): -crested
μερος / meros / *merus*	–μερος / -meros	*-merus* (*-a, -um*): -thighed
νωτος / notos / *notus****	–νωτος / -notos	*-notus* (*-a, -um*): -backed
οφθαλμος / ophthalmos / *ophthalmus*	–οφθαλμος / -ophthalmos	*-ophthalmus* (*-a, -um*): -eyed
ορροος / orroos / *orrhous*	–ορροος / -orroos	*-orrhous* (*-a, -um*): -vented
πεπλος / peplos / *peplus*	–πεπλος / -peplos	*-peplus* (*-a, -um*): -robed
ρυγχος / rugchos / *rhynchus*	–ρυγχος / -rugchos	*-rhynchus* (*-a, -um*): -billed
ραμφος / ramphos / *rhamphus*	–ραμφος / -ramphos	*-rhamphus* (*-a, -um*): -billed
σπιλος / spilos / *spilus*	–σπιλος / -spilos	*-spilus* (*-a, -um*): -spotted

* also written πλευρον / pleuron / *pleurum*

** also written πτερυξ / pterux / *pteryx*

*** also written νωτον / noton / *notum*

E) LATINIZED ADJECTIVES DERIVED FROM GREEK NOUNS WITH LATINIZED ENDINGS IN *-US*, *-A*, OR *-UM*.

The feminine form of some latinized Greek adjectives happens to have the same ending as the **transliterated** Greek nouns from which they are derived (e.g. *pyrrhomitra,* from πυρρομιτρος [purromitros: red-banded], based on μιτρα [mitra: band] —see Table 1); such names, ending in transliterated Greek words, are to be treated as indeclinable (see Section P below).

However, other latinized adjectives have the same ending (in *-us* or *-a*) as the **latinized** Greek nouns from which they are derived (see Table 1). This may have caused confusion in a few cases. We believe that these latinized adjectives (e.g. *leucocephala,* from λευκοκεφαλος [leukokephalos: white-headed], based on κεφαλη [kephale: head], etc.) are indeed adjectives, formed like genuine adjectives such as λευκοκερκος [leukokerkos: white-tailed]. To consider them as indeclinable, as some authors have done (see # 96, 101, 102, and 104 below) despite the fact that the wording of ICZN (1985, Art. 31b) was clear in this respect, would mean that **all similar** latinized adjectives derived from Greek would be indeclinable. This would be contrary to the overwhelming usage of treating these names as variable adjectives; the following are but a few examples of the many latinized adjectives (including incorrect original spellings) that have been universally treated as variable:

Ibis oxycercus Spix, 1825, now *Cercibis oxycerca*;
Sittasomus stictolaemus Pelzeln, 1868, now *Deconychura stictolaema*;
Eupetes castanonotus Salvadori, 1875, now *Ptilorrhoa castanonota*;
Phasianus erythrophthalmus Raffles, 1822, now *Lophura erythrophthalma*;
Coccyzus erythropyga Lesson, 1842, now *Morococcyx erythropygus*;
D[*rymoica*] *melanorhynchus* Jardine & Fraser, 1852, now *Prinia subflava melanorhyncha*;
Alcedo melanura Kaup, 1848, now *Ceyx melanurus*; etc.

Therefore:

93. ***Thalassornis leuconotus*** Eyton, 1838, must remain as is, and not should not be changed to *Thalassornis leuconotos.*
94. *Estrilda cyanocephala* Richmond, 1897, must be spelt ***Uraeginthus cyanocephalus****,* not *U. cyanocephala.* The name *cyanocephala* is latinized from the Greek adjectival κυανοκεφαλος [kuanokephalos: blue-headed].
95. *Recurvirostra leucocephala* Vieillot, 1816, must be spelt ***Cladorhynchus leucocephalus****,* not *C. leucocephala.* The name *leucocephala* is latinized from the Greek adjectival λευκοκεφαλος [leukokephalos: white-headed].
96. *Anas Melancorypha* Molina, 1782, p. 344 [selected over *Anas Melancoripha* Molina, 1782, p. 234, by first revisers Hellmayr & Conover (1948)], must be spelt ***Cygnus melancoryphus*** [as per Blake (1977), Sick (1993)] or ***Sthenelides melancoryphus.*** Presumably because of the capital letter in *Melancorypha,* Sibley & Monroe (1990: 29) stated that the name was treated in the original description as a noun in apposition. Because all species-group names in Molina

(1782) have an initial capital letter, such a conclusion is unfounded (David & Gosselin 2000). Since Molina's name is feminine and agrees in gender with the genus *Anas,* we conclude that *melancorypha* can only be the correct latinization of the Greek adjectival μελαγκορυφος [melagkoruphos: black-headed], as diagnosed by Molina (1782: 234), and not the latinized masculine noun μελαγκορυφος [melagkoruphos: tit or warbler]. It must also be noted that Molina used *Melancorypha,* not *"Melanocorypha",* an incorrect spelling given by many authors. The following spellings are therefore erroneous: *Cygnus melanocorypha* [of Sibley & Monroe (1990), del Hoyo *et al.* (1992)], *Cygnus melanocoryphus* [of Peters (1979a)], and *Sthenelides melanocoryphus* [of Wolters (1982)].

97. *Mezobucco duvaucelii gigantorhinus* Oberholser, 1912, must be spelt ***Megalaima australis gigantorhina,*** not *Megalaima a. gigantorhinus.* The name *gigantorhinus* is latinized from the Greek adjectival γιγαντορρινος [gigantorrinos: giant-nosed].
98. *Turdus xanthoscelus* Jardine, 1847, must be spelt ***Platycichla flavipes xanthoscela,*** not *P. f. xanthoscelus.* The name *xanthoscelus* is latinized from the Greek adjectival ξανθοσκελης [xanthoskeles: yellow-legged].
99. *Megaloprepia poliura* Salvadori, 1878, must be spelt ***Ptilinopus magnificus poliurus,*** not *P. m. poliura.* The name *poliura* is latinized from the Greek adjectival πολιουρος [poliouros: grey-tailed]. For the treatment of names originally ending in *-oura,* however, see # 209 below.
100. *Panychlora stenura* Cabanis & Heine, 1860, must be spelt ***Chlorostilbon stenurus***, not *C. stenura. Chlorostilbon* is masculine (ICZN 1999, Art. 30.1.2). The name *stenura* is latinized from the Greek adjectival στενουρος [stenouros: narrow-tailed]. For the treatment of names originally ending in *-oura,* however, see # 209 below.
101. *Myiolestes phaionotus* Bonaparte, 1851, must be spelt ***Pachycephala phaionota*** [as per Peters (1967), Wolters (1982), etc.], not *P. phaionotus* [as in Sibley & Monroe (1990), etc.]. Andrew (1992: 50), without further explanations, stated: "*P. phaionotus*: not *'phaionota'*; a noun in apposition (White & Bruce 1986)". In *phaionotus,* only the -os ending has been latinized from the Greek adjectival φαιονωτος [phaionotos: dusky-backed], but the name still qualifies as latinized (ICZN 1999, Glossary: latinize). See also # 102 below.
102. *Gerygone chloronotus* Gould, 1843, must be corrected to ***Gerygone chloronota*** [as per Wolters (1982), Peters (1986)]. *Gerygone* is feminine (ICZN 1999, Art. 30.1.2). Sibley & Monroe (1990: 442) and Christidis & Boles (1994: 65), however, incorrectly used *Gerygone chloronotus,* stating that Gould's original spelling indicated usage as a noun in apposition. The name *chloronotus* is latinized from the Greek adjectival χλορονωτος [chloronotos: green-backed]. The case is perfectly analogous to *Ninox spilonotus* Bourns & Worcester, 1894, now universally known as *Ninox philippensis spilonota* [as per Peters (1940), del Hoyo *et al.* (1999)].

103. *Columba phaeonotus* Gray, 1856, must be corrected to *Columba phaeonota*, and the present correct spelling is ***Columba guinea phaeonota***, not *C. g. phaeonotus.* The name *phaeonotus* is latinized from the Greek adjectival φαιονωτος [phaionotos: dusky-backed]. See # 101-102 above.
104. [*Cinclosoma*] *castanotus* Gould, 1840, must be corrected to ***Cinclosoma castanotum*** [as per Peters (1964), Wolters (1982)]. *Cinclosoma* is neuter (ICZN 1999, Art. 30.1.2). Sibley & Monroe (1990: 457) stated that *castanotus* is "a noun in apposition" but gave no further explanation, merely saying that Gould's original combination supported that conclusion (but see # 77 above, for Gould's idiosyncratic gender combinations). In names such as *castanotus, cyanotus, melanotus,* and *leucorypha,* the initial components *casta-, cya-, mela-,* and *leu-,* stand through elision as the adjectival stems *castano, cyano, melano,* and *leuco* (of *castanonotus* [chestnut-backed], *cyanonotus* [blue-backed], *melanonotus* [black-backed], and *leucocorypha* [white-headed]). Usage treats these names as latinized adjectives, e.g. *Hemipodius castanotus* Gould, 1839 [now *Turnix castanota*]; *Coryphegnatus melanotus* Heuglin, 1863 [now *Amblyospiza albifrons melanota*]; *Euplocomus melanotus* "Blyth" Hutton, 1848 [now *Lophura leucomelanos melanota*]; and *Aquila leucorypha* Pallas, 1771 [now *Haliaeetus leucoryphus*]. See also # 101-103 above, for other adjectives derived from νωτος [notos: back].
105. *Turdus cyanotus* Jardine & Selby, 1828, must be spelt ***Zoothera citrina cyanota***, not *Z. c. cyanotus.* See # 104 above.
106. *Turtur decaocto xanthocyclus* Newman, 1906, must be spelt ***Streptopelia decaocto xanthocycla***, not *S. d. xanthocyclus.* The name *xanthocyclus* (from the Greek adjectival ξανθοκυκλος [xanthokuklos: yellow-ringed]) has here nothing to do with the Latin noun *cyclus* (a yearly period).
107. *Columba gymnocyclus* Gray, 1856, must be corrected to *Columba gymnocycla*, and the present correct spelling is ***Columba livia gymnocycla***, not *C. l. gymnocyclus.* The name *gymnocyclus* is latinized from the Greek adjectival γυμνοκυκλος [gumnokuklos: bare-ringed]). See also # 106 above.
108. *Trichixos pyrropyga* Lesson, 1839, must be corrected to ***Trichixos pyrropygus***; it is also known as *Copsychus pyrropygus* [as per Peters (1964), Andrew (1992), etc.]. *Trichixos* is masculine (ICZN 1999, Art. 30.1.2). In addition to *Trichixos pyrropyga,* the following spellings are incorrect: *Trichixos pyrrhopyga* [of Wolters (1982)] and *Copsychus pyrropyga* [of Smithies (1981)]. There are at least six original avian species names that end in *-pyga.* In *Hirundo griseopyga* Sundevall, 1850, *griseopyga* is a Latin noun phrase since it has the Latin component *griseo-* preceding the classical Latin noun *pyga* [rump]; it is thus invariable (see Section I below). The other names are: *Formicivora ochropyga* Hellmayr, 1906 [now *Drymophila ochropyga*]; *Vitiflora leucopyga* Brehm, 1855 [now *Oenanthe leucopyga*]; *Estrilda rhodopyga* Sundevall, 1850; and *Coccyzus erythropyga* Lesson, 1842 [now *Morococcyx erythropygus*]; since the first component of each stems from Greek, all must be considered as latinized Greek

adjectives patterned on classical adjectives such as λευκοπυγος [leukopugos: white-rumped]. For this reason, *Coccyzus erythropyga* Lesson, 1842, was corrected to *Coccyzus erythropygus* (Sclater & Shelley 1891), and is now universally known as *Morococcyx erythropygus*. In *Trichixos pyrrhopygus* [of MacKinnon & Phillipps (1993)], and *Copsychus pyrrhopygus* [of Howard & Moore (1994)], the species-group names (with *rrh* instead of *rr*) are unjustified emendations (ICZN 1999, Art. 32.3, 32.5.1.1 Examples).

109. *Monachalcyon princeps erythrorhamphus* Stresemann, 1931, must be corrected to *Monachalcyon princeps erythrorhampha,* and the present correct spellings are *Actenoides princeps erythrorhamphus* or ***Halcyon princeps erythrorhampha***, not *H. p. erythrorhamphus. Halcyon* is feminine (ICZN 1999, Art. 30.1.1). The name *erythrorhamphus* is latinized from the Greek adjectival ερυθροραμφος [eruthroramphos: red-billed].
110. *Andigena spilorhynchus* Gould, 1858, must be corrected to *Andigena spilorhyncha,* and the present correct spelling is ***Andigena nigrirostris spilorhyncha***, not *A. n. spilorhynchus.* The name *spilorhynchus* is latinized from the Greek adjectival σπιλορυγχος [spilorugchos: spotted-billed].

F) LATINIZED GREEK ADJECTIVES ENDING IN -*GASTRA*

Original names that end in *-gaster* and that have Latin initial components (such as *flavigaster, rufigaster,* etc.) are noun phrases that end in the classical Latin noun *gaster* (see Section I below), and are to be treated as nouns in apposition, with gender ending unchanged (ICZN 1999, Art. 31.2.1, 32.3, 34.2.1, Glossary: noun phrase). Original names that end in *-gaster* and that have Greek initial components (such as *xanthogaster, erythrogaster,* etc.), must be considered as ending in the transliterated Greek noun γαστηρ [gaster: belly], and are also indeclinable (ICZN 1999, Art. 31.2.3; see Section P below).

At least fourteen original avian names end in *-gastra,* and have an initial Greek adjectival component; all but one [*Troglodytes leucogastra* Gould, 1837, now *Uropsila leucogastra*] have been coined in combination with feminine genera [for words with Latin adjectival components, see Section L below]. Greek adjectives based on the Greek noun γαστηρ [gaster] end in -γαστρος [-gastros], such as λεπτογαστρος [leptogastros: thin-bellied], and the latinized form of leptogastros is *leptogastrus* (ICZN 1985: 185), of which the feminine and neuter endings are respectively *leptogastra* and *leptogastrum* (ICZN 1999, Art. 31.2.3 Example). Original names that end in *-gastra* and that have an initial Greek adjectival component (*leuco-, cyano-, xantho-,* etc.) are thus latinized Greek adjectives.

When original names ending in *-gastra* were combined with masculine genera, the *-gastra* ending was often changed to *-gaster.* The *-gaster* ending, however, is the transliterated feminine noun γαστηρ, when in fact the latinized masculine adjectival *-gastrus* ending was needed. Therefore:

111. ***Pachycephala leucogastra*** Salvadori & d'Albertis, 1875, must remain as is, and should not be changed to *P. leucogaster.* Andrew (1992: 50) was partly in error when he wrote that *leucogastra* "is an incorrect latinization and stands as originally published [I. A. McAllan]"; presumably, he was simply objecting to the use of *"leucogaster".* The name *leucogastra* is the correct latinization of the Greek adjectival λευκογαστρος [leukogastros: white-bellied].
112. ***Irena cyanogastra*** Vigors, 1831, must remain as is, and should not be changed to *I. cyanogaster.* The name *cyanogastra* is latinized from the Greek adjectival κυανογαστρος [kuanogastros: blue-bellied].
113. *Motacilla erythrogastra* Güldenstädt, 1775, must be spelt ***Phoenicurus erythrogastrus***, not *P. erythrogaster.* The name *erythrogastra* is latinized from the Greek adjectival ερυθρογαστρος [eruthrogastros: red-bellied].
114. *Columba hyogastra* Temminck, 1824, must be spelt ***Jotreron hyogastrus*** or ***Ptilinopus hyogastrus*** [not *J. hyogastra* as in Wolters (1982), *P. hyogastra* as in Peters (1937), or *P. hyogaster* as in del Hoyo *et al.*(1997)]. According to del Hoyo *et al.* (1997: 222), the name is "often erroneously given as *hyogastra,* but maintenance of [the] original [feminine] gender is unjustified". The statement is incompatible with the fact that the ending *gaster* is a feminine substantive (the Greek noun γαστηρ [gaster: belly]), claimed by del Hoyo *et al.* to be a masculine latinized adjective (from ιογαστρος [iogastros: violet-bellied]). Note that *Jotreron* is masculine (see # 90 above).
115. *Dacnidea leucogastra* Taczanowski, 1874, must be spelt ***Hemispingus superciliaris leucogastrus***, not *H. s. leucogaster.* See also # 111 above.
116. *Zosterops poliogastra* Heuglin, 1861, must be corrected to ***Zosterops poliogastrus***, not *Z. poliogaster. Zosterops* is masculine (ICZN 1999, Art. 30.1.4.3). The name *poliogastra* is latinized from the Greek adjectival πολιογαστρος [poliogastros: grey-bellied].

Latin and latinized nouns and noun phrases

Species-group names that are simple or compound nouns, or are noun phrases that end in a noun, never vary in spelling whatever the gender of the generic name with which they are combined, and the original spelling is to be retained, with gender ending unchanged (ICZN 1999, Art. 31.2.1, 32.3, 34.2.1, Glossary: noun phrase).

G) LATIN NOUNS

Names that are classical and mediaeval Latin nouns are always invariable (ICZN 1999, Art. 11.9.1.2, 31.2.1, Glossary: Latin); examples include *Columba palumbus* Linnaeus, 1758, *Cepphus columba* Pallas, 1811, etc. The following names are all classical or mediaeval Latin nouns (Lewis & Short 1879; Glare 1982), and not adjectives. Therefore:

117. *Pseudogerygone cantator* Weatherill, 1908, must be spelt ***Gerygone levigaster cantator***, and should not be changed to *G. l. cantatrix*. Sibley & Monroe (1990:

443) correctly noted that *cantator* is "a noun in apposition and remains in the masculine", *contra* Mayr who used *cantatrix,* stating that it was the "feminine ending of *cantator"* (Peters 1986: 455 footnote). Like the nouns *imperatrix* [empress] and *imperator* [emperor], *cantator* [songster] is a Latin noun, not an adjective, of which *cantatrix* [songstress] is the feminine corresponding noun.

118. *Halcyon sordidus* [*sic*] *colonus* Hartert, 1896, must be spelt ***Halcyon chloris colonus*** or ***Todiramphus chloris colonus***, and should not be changed to *H. c. colona* [as in Peters (1945), Howard & Moore (1994)] or *T. c. colona* [as in Clements (2000)]. The word *sordidus* is a classical Latin adjective and is variable (see Section A above), while the word *colonus* is a classical Latin noun and is invariable [*viz. Colonia colonus* (Vieillot, 1818)]. See also # 84 above.
119. *Caprimulgus furcifer* Vieillot, 1817, must be spelt ***Hydropsalis brasiliana furcifer,*** and should not be changed to *H. b. furcifera.* The classical Latin word *furcifer* is a noun, not an adjective.
120. *Sterna hybrida* Pallas, 1811, must be spelt ***Chlidonias hybrida*** [as per Peters (1934), Wolters (1982), Ornithological Society of New Zealand (1990), etc.], and should not be changed to *C. hybridus* [as in Mees (1977), Sibley & Monroe (1990), etc.]. *Chlidonias* is masculine, and the Latin word *hybrida* is a masculine noun, not a feminine adjective. The fact that *hybridus* (*-a, -um*) has been used as an adjective in modern scientific nomenclature is irrelevant here because modern scientific Latin is not included in the definition of Latin by ICZN (1999, Glossary: Latin). Mees (1977: 49) admittedly advocated the use of *hybridus* against the advice of a scholar.
121. *Pterythius* [sic] *pallidus hybrida* Harington, 1913, must be spelt ***Pteruthius xanthochlorus hybrida*** or *Allotrius xanthochlorus hybrida* [as per Wolters (1982)], and should not be changed to *P. x. hybridus.* See # 120 above.
122. *Thryothorus luscinius* Quoy & Gaimard, 1830, must be spelt ***Acrocephalus luscinius,*** and should not be changed to *A. luscinia.* The word *luscinius* is a classical Latin noun, as is *luscinia,* both having the same meaning [nightingale].
123. *Sitagra monacha* Sharpe, 1890, must be spelt ***Ploceus pelzelni monacha***, and should not be changed to *P. p. monachus.* Both *monacha* [nun] and *monachus* [monk] are Latin nouns, not adjectives. Similar cases in avian nomenclature include *Myiopsitta monachus* (Boddaert, 1783), and *Oriolus monacha* (Gmelin, 1789).
124. *Halcyon* (*Paralcyon*) *monachus* Bonaparte, 1850, must be spelt ***Halcyon monachus*** or ***Actenoides monachus,*** and should not be changed to *H. monacha* or *A. monacha.* See # 123 above.

H) THE LATIN NOUN *ATRICAPILLA*

The Latin word *atricapilla* [a bird, most likely the Blackcap], attested by a classical use in Festus, is given as a feminine noun by Lewis & Short (1879) and Glare (1982). Some Latin dictionaries, such as the *Thesaurus linguae latinae* (Internationale Thesaurus-Kommission 1900-1993), list *atricapillus* (*-a, -um*) as an adjective with reference only to the *Glossarium graeco-latinum* (see Goetz 1892); in this work, however, the word *atricapellus* [sic] is simply listed alongside the Greek nouns μελαγκορυφος [melagkoruphos: a bird (tit or warbler)] and μελανθριξ [melanthrix: black hair] (Liddell & Scott 1996). Thus, the word *atricapilla* can only be cited as having been used as a noun in classical or mediaeval Latin, and is consequently invariable (ICZN 1999, Art. 11.9.1.2, 26, 31.2.1, 32.3, 34.2.1, Glossary: Latin). Therefore:

125. ***Zosterops atricapilla*** Salvadori, 1879, must remain as is [as per Peters (1968), Andrew (1992)], and should not be changed to *Z. atricapillus* [as in Sibley & Monroe (1990)].
126. ***Vireo atricapilla*** Woodhouse, 1852, must remain as is, and should not be changed to *V. atricapillus.*
127. *Turdus atricapilla* Linnaeus, 1766, must be spelt ***Donacobius atricapilla,*** and should not be changed to *D. atricapillus.* See David & Gosselin (2000) for a detailed explanation of this case.
128. *Strix atricapilla* Temminck, 1822, must be spelt ***Megascops atricapilla*** or ***Otus atricapilla,*** and should not be changed to *M. atricapillus* or *O. atricapillus.* Because the etymology given above [a passerine] might not readily apply to this bird, *atricapilla* may also be viewed as a noun phrase ending in the modified Latin noun *capillus,* which would also make it invariable (see # 151 below).

I) NOUN PHRASES ENDING IN A LATIN NOUN OR A NOUN DERIVED FROM LATIN

Many original scientific names consist of a Latin adjectival stem preceding a Latin noun such as *ala* [wing], *capillus* [hair], *cauda* [tail], *cilla* [tail, a mediaeval meaning (Jobling 1991, Donovan & Ouellet 1993)], *gaster* [belly], *gula* [throat], *nucha* [nape], *pectus* [breast], *pileum* [cap], *pileus* [cap], *pyga* [rump], *tergum* [back], *venter* [belly], etc. Such names must not be confused with latinized Greek adjectives consisting of a Greek adjectival stem joined to a Greek noun stem and a variable ending (see Section D above). Noun phrases that end in a Latin noun are to be treated as nouns in apposition, and the original spelling is to be retained, with gender ending unchanged (ICZN 1999, Art. 31.2.1, 32.3, 34.2.1, Glossary: noun phrase). Examples include *Icterus graduacauda* Lesson, 1839; *Picus flavigula* (Boddaert, 1783); *Arborophila rufipectus* Boulton, 1932; etc. Therefore:

129. *Hemixos flavala* Blyth, 1845, must be spelt ***Hypsipetes flavala,*** and should not be changed to *Hypsipetes flavalus.*
130. ***Cisticola angusticauda*** Reichenow, 1891, must remain as is, and should not be changed to *C. angusticaudus.*
131. *Cypselus acuticauda* Blyth, 1865, must be spelt ***Apus acuticauda***, and should not be changed to *A. acuticaudus.*
132. *Domicella albidinucha* Rothschild & Hartert, 1924, must be spelt ***Lorius albidinucha,*** and should not be changed to *L. albidinuchus.*

133. ***Todirostrum plumbeiceps cinereipectus*** Novaes, 1953, must remain as is, and should not be changed to *T. p. cinereipectum.*
134. *Ceyx cyano-pectus* Lafresnaye, 1840, must be spelt *Ceyx cyanopectus* [as per Peters (1945)], *Alcyone cyanopectus* [as per Wolters (1982)] or ***Alcedo cyanopectus*** [as per Dickinson *et al.* (1991)], and should not be changed to *Alcedo cyanopecta* [as in Sibley & Monroe (1990), etc.].
135. ***Halcyon senegalensis fuscopileus*** Reichenow, 1906, must remain as is, and should not be changed to *H. s. fuscopilea.*
136. *Dasycephala citreopyga* Bonaparte, 1854, must be spelt ***Attila spadiceus citreopyga,*** and should not be changed to *A. s. citreopygus.* Since *citreo-* is a Latin component, *citreopyga* cannot be a Greek adjective derived from πυγη [pyge: see # 108 above]. The name *citreopyga* ends here in the Latin noun *pyga* [rump].
137. *Ramphomicrus* [sic] *microrrhynchus* [sic] *andicola* Simon, 1921, must be spelt ***Ramphomicron microrhynchum andicola,*** and should not be changed to *R. m. andicolum.* The name *andicola* is a noun phrase consisting of two noun stems: *andi-,* from *Andes* (see Pritchard 1994), and *-cola* [dweller], a substantival suffix (Glare 1982) used in several classical Latin nouns (*monticola, limicola,* etc.).
138. *Poecilothraupis ignicrissa* Cabanis, 1873, must be spelt ***Anisognathus igniventris ignicrissa,*** and should not be changed to *A. i. ignicrissus.* Introduced by Illiger (1811: 166), the noun *crissum* [vent] was derived from *crissare* [to move the haunches] (Simpson & Weiner 1989, Jobling 1991). The words *"crissus"* and *"crissa"* could just as well have been derived for the same purpose. There is no adjectival suffix and no adjectival meaning in the modern Latin words *crissus, crissa,* and *crissum,* as there is in *crissalis,* for example. In this context, original compound words that end in *-crissus* and *-crissa* can only be viewed as noun phrases that end in a noun derived from Latin; they cannot be Latin or latinized adjectives.
139. *Eupetes nigricrissus* Salvadori, 1876, must be spelt ***Ptilorrhoa caerulescens nigricrissus,*** and should not be changed to *P. c. nigricrissa.* See # 138 above.
140. *Gallinula ruficrissa* Gould, 1869, must be spelt ***Amaurornis olivacea ruficrissa*** or ***Amaurornis moluccana ruficrissa,*** and should not be changed to *A. olivaceus ruficrissus* [as in Howard & Moore (1994)] or *A. moluccanus ruficrissus* [as in Wolters (1982) and del Hoyo *et al.* (1996)]; see # 138 above. Moreover, *Amaurornis* Reichenbach, 1852, ending in a Greek noun of common gender, is feminine because it was originally established in combination with the feminine adjective *olivacea* (ICZN 1999, Art. 30.1.4.2).
141. *Cecropis melanocrissus* Rüppell, 1845, must be spelt ***Cecropis daurica melanocrissus*** or ***Hirundo daurica melanocrissus,*** and should not be changed to *C. d. melanocrissa* or *H. d. melanocrissa.* In *melanocrissus,* the initial component is Greek (not Latin as in the above three names), but the name is nonetheless invariable. See # 138 above.

J) NOUN PHRASES ENDING IN THE LATIN NOUN *CAPILLUS*

The Latin word *capillus* is and always has been a noun (Lewis & Short 1879, Glare 1982). Original names consisting of a Latin adjectival stem joined to the Latin noun *capillus* are noun phrases that are to be treated as nouns in apposition, as are the names ending in *-cauda, -pileum, -pectus,* etc. (see Section I above); the original spelling is thus to be retained, with gender ending unchanged (ICZN 1999, Art. 31.2.1, 32.3, 34.2.1, Glossary: noun phrase). Therefore:

142. *Psittacus auricapillus* Kuhl, 1820, must be spelt ***Aratinga auricapillus*** [as per Peters (1937)], and should not be changed to *A. auricapilla.*
143. *Rhinopsar brunneicapillus* Danes, 1938, must be spelt ***Aplonis brunneicapillus***, and should not be changed to *A. brunneicapilla.*
144. *Tyrannulus brunneicapillus* Lawrence, 1862, must be spelt ***Ornithion brunneicapillus***, and should not be changed to *O. brunneicapillum.*
145. *Aethiops canicapillus* Strickland, 1841, must be spelt ***Nigrita canicapillus***, and should not be changed to *N. canicapilla.*
146. *Trichophorus canicapillus* Hartlaub, 1854, must be spelt ***Bleda canicapillus***, and should not be changed to *B. canicapilla.* Note also that Bleda is the name of Attila's brother (Internationale Thesaurus-Kommission 1900-1993, Jobling 1991), and thus *Bleda* Bonaparte, 1857, must be treated as masculine, as is *Attila* Lesson, 1830 (ICZN 1999, Art. 30.1.1).
147. *Turdinus canicapillus* Sharpe, 1887, must be spelt ***Trichastoma pyrrogenys canicapillus*** or ***Pellorneum pyrrogenys canicapillus***, and should not be changed to *T. p. canicapillum* or *P. p. canicapillum.*
148. *Colaptes cinereicapillus* Reichenbach, 1854, must be spelt ***Colaptes rupicola cinereicapillus*** [as per Peters (1948)], and should not be changed to *C. r. cinereicapilla.*
149. *Dr*[*ymocataphus*] *fuscocapillus* Blyth, 1849, must be spelt ***Pellorneum fuscocapillus***, and should not be changed to *P. fuscocapillum.*
150. *Bucco rubricapillus* Gmelin, 1788, must be spelt ***Megalaima rubricapillus*** or ***Xantholaema rubricapillus***, and should not be changed to *M. rubricapilla* or *X. rubricapilla.*
151. *Parus atricapillus* Linnaeus, 1766, must be spelt ***Poecile atricapillus*** [as per AOU (1998)], and should not be changed to *Poecile atricapilla* [as in Wolters (1982), AOU (2000)]. Linnaeus's *atricapillus* could also be viewed as the Latin noun *atricapilla* with a modified ending, as it was customary for him to coin such names (e.g. *Alcedo erithaca,* see # 152 below). See also Section H above.

K) MODIFIED LATIN NOUNS

The following names are Latin nouns (Lewis & Short 1879, Glare 1982) with a modified ending that is not adjectival. Whether or not the original authors of these names had meant to use them as adjectives (by using a gender ending in agreement with the genus with which they were coined) is irrelevant under the present ICZN Code since they are not Latin adjectives or adjectives derived from Latin. These names are to be treated as nouns in apposition, and the original spelling is to be retained (ICZN 1999, Art. 31.2.1, 32.3, 34.2.1), as is the case of e.g. *umbellus* in *Tetrao umbellus* Linnaeus, 1766, now known as *Bonasa umbellus.* Treating the following names as wholly new words that are neither Latin nor latinized would also make them invariable (ICZN 1999, Art. 31.2.3). Although *-us* (*-a, -um*) can be a Latin adjectival suffix, it is only so when added to a noun that ends in a consonant [such as *odorus* from *odor* (Glare, 1982)]. Therefore:

152. *Alcedo erithaca* Linnaeus, 1758, must be spelt ***Ceyx erithaca,*** and should not be changed to *C. erithacus.* The name *erithaca* is the modified Latin noun *erithacus.* See David & Gosselin (2000) for a detailed explanation of this case.
153. *Alcippe fratercula* Rippon, 1900, must be spelt ***Alcippe morrisonia fratercula,*** and should not be changed to *A. m. fraterculus.* The name *fratercula* is the modified Latin noun *fraterculus.*
154. *Pinarolestes megarhynchus hybridus* Meise, 1929, must be spelt ***Colluricincla megarhyncha hybridus,*** and should not be changed to *C. m. hybrida.* The name *hybridus* is the modified Latin noun *hybrida.* Although *hybridus* may have been considered a modern Latin adjective, modern Latin is not included in the definition of Latin by ICZN (1999, Glossary: Latin). See also # 120 above.
155. *Procellaria urinatrix* Gmelin, 1789, must be spelt ***Pelecanoides urinatrix*** [as per Peters (1931), Marchant & Higgins (1990), Ornithological Society of New Zealand (1990), etc.], and should not be changed to *P. urinator* [as in Peters (1979a)]. Gmelin's original name is a new word that is the feminine counterpart of the Latin masculine noun *urinator,* created on the model of the masculine and feminine Latin nouns *imperator* and *imperatrix.* Since *urinatrix* is not a Latin adjective, it must remain unchanged, as is the case for *sibilatrix* in *Motacilla sibilatrix* Bechstein, 1793, now known as *Phylloscopus sibilatrix.*

L) NOUN PHRASES ENDING IN A MODIFIED LATIN NOUN

There are few original avian species names that have the Latin nouns *dorsum* [back], *mentum* [chin], and *rostrum* [beak] as final components. Several names, however, are derived from these nouns and from others (see Section I above), but with a modified ending that is not adjectival (e.g. *-caudus, -colus, -dorsa, -gastra, -mentus, -rostra,* etc.). Adjectives derived from the above Latin nouns would end in a recognizable suffix (e.g. *-caudatus, -dorsalis, -rostratus, -rostris,* etc.). Although *-us* (*-a, -um*) can be a Latin adjectival suffix, it is only so when added to a noun that ends in a consonant [such as *odorus* from *odor* (Glare, 1982)]. Original names consisting of a Latin noun with a modified ending, even when preceded by a Latin adjectival component, are noun phrases that are to be treated as nouns in apposition, and the original spelling is to be retained, with gender ending unchanged (ICZN 1999, Art. 31.2.1, 32.3, 34.2.1, Glossary: compound, noun phrase). Therefore:

156. ***Ceyx rufidorsa*** Strickland, 1846, must remain as is, and should not be changed to *C. rufidorsum* [as in Peters (1945)] or *C. rufidorsus* [as in Wolters (1982)].

157. ***Ploceus nigrimentus*** Reichenow, 1904, must remain as is, or be spelt ***Otyphantes nigrimentus***, and should not be changed to *P. nigrimentum* [as in Peters (1962), etc.] or *O. nigrimentum* [as in Wolters (1982)].

158. *Alcedo rufigastra* Walden, 1873, must be spelt ***Alcedo meninting rufigastra***, and should not be changed to *A. m. rufigaster.* Since *rufi-* is not a Greek stem, *rufigastra* cannot be a latinized Greek adjective [as *erythrogastra* is], and the component *gastra* can only be here the Latin noun *gaster* [belly] with a modified ending. This is why *Threnetes niger rufigastra* Cory, 1915, is spelt correctly [as per Peters (1945), del Hoyo *et al.* (1999)].

159. *Muscicapa rufigastra* Raffles, 1822 must be spelt *Niltava rufigastra* or ***Cyornis rufigastra***, and should not be changed to *C. rufigaster.* Andrew (1992: 49) noted that *rufigastra* "is an incorrect latinization and stands as originally published". See # 158 above.

160. *Nectarinia flavigastra* Gould, 1843, must be spelt ***Cyrtostomus jugularis flavigastra***, ***Cinnyris jugularis flavigastra***, or ***Nectarinia jugularis flavigastra***, and should not be changed to *Cyrtostomus j. flavigaster*, *Cinnyris j. flavigaster* or *N. j. flavigaster.* Since *flavi-* is not a Greek stem, *flavigastra* cannot be a latinized Greek adjective [as *xanthogastra* is], and the component *gastra* can only be here the Latin noun *gaster* [belly] with a modified ending. See # 158 above.

161. *Trochilus longicaudus* Gmelin, 1788, must be spelt ***Discosura longicaudus***, and should not be changed to *D. longicauda.* Since *longi-* is a Latin adjectival stem, *longicaudus* can only end here in the Latin noun *cauda* [tail] with a modified ending.

162. *Ochetorhynchus ruficaudus* Meyen, 1834, must be spelt ***Upucerthia ruficaudus***, and should not be changed to *U. ruficauda.* See # 161 above.

163. *Cypselus spinicaudus* Temminck, 1839, must be spelt ***Chaetura spinicaudus***, and should not be changed to *C. spinicauda.* See # 161 above.

164. *Pteruthius spinicaudus* Pucheran, 1853, must be spelt ***Pachycephala pectoralis spinicaudus*** *or* ***Pachycephala melanura spinicaudus***, and should not be changed to *P. p. spinicauda* or *P. m. spinicauda.* See # 161 above.

165. *Hypsibamon andicolus* Cabanis, 1873, must be spelt ***Grallaria andicolus***, and should not be changed to *G. andicola.* The name *andicolus* ends here in the substantival suffix *-cola* [dweller] with a modified ending. See also # 137 above.

166. *Gallinula flavirostra* Swainson, 1837, must be spelt ***Amaurornis flavirostra*** [as per Sibley & Monroe (1990)], ***Limnocorax flavirostra*** [as per Peters (1934)] or *Porzana flavirostra* [as per Howard & Moore (1994)]. The following spellings are incorrect: *Amaurornis flavirostris* [of Dowsett & Forbes-Watson (1993), Urban *et al.* (1986), del Hoyo *et al.* (1996)] and *Limnocorax flavirostris* [of Wolters (1982)]. To change *flavirostra* to *flavirostris* would turn an invariable noun phrase into a variable adjective.

167. *Acanthiza magnirostra* Gould, 1838, must be spelt ***Sericornis magnirostra,*** and should not be changed to *S. magnirostris.* To change *magnirostra* to *magnirostris* would turn an invariable noun phrase into a variable adjective.

M) NOUN PHRASES ENDING IN *CAPILLA*

As a final component of species-group names, *-capilla* is the Latin noun *capillus* with a modified ending, and does not include any adjectival suffix. Adjectival names derived from *capillus* would end in a recognizable suffix (*-capillata, -capillosa,* etc.). Original names ending in *capilla* [the modified Latin noun *capillus*] are noun phrases that are to be treated as nouns in apposition [on the model of *atricapilla*, see Section H above], as are the names that end in *-caudus, -dorsa, -mentus, -rostra,* etc. (see Section L above); the original spelling of these names is to be retained, with gender ending unchanged (ICZN 1999, Art. 31.2.1, 32.3, 34.2.1, Glossary: compound, noun phrase). For example, *Prionochilus percussus ignicapilla*, *Ptilinopus roseicapilla, Phylloscopus ruficapilla* and *Serinus gularis canicapilla,* have been spelt as such by Peters (1937, 1967, 1968), even though these genera are masculine. Therefore:

168. ***Zosterops fuscicapilla*** Salvadori, 1875, must remain as is [as per Andrew (1992)], and should not be changed to *Z. fuscicapillus* [as in Sibley & Monroe (1990), etc.].
169. *Motacilla aurocapilla* Linnaeus, 1766, must be spelt ***Seiurus aurocapilla,*** and should not be changed to *S. aurocapillus.* According to Ridgway (1902), Audubon, Wilson, Bonaparte, Vieillot, Nuttall and Townsend used *aurocapilla* in combination with the masculine noun *Turdus.*
170. *Poliospiza canicapilla* Dubus, 1855, must be spelt ***Serinus gularis canicapilla,*** and should not be changed to *S. g. canicapillus.*
171. *Setophaga castaneocapilla* Cabanis, 1849, must be spelt ***Myioborus castaneocapilla,*** and should not be changed to *M. castaneocapillus.*
172. *Phyllomyias cinereicapilla* Cabanis, 1873, must be spelt ***Zimmerius cinereicapilla,*** and should not be changed to *Z. cinereicapillus.*
173. *Alcippe cinereocapilla* Salvadori, 1868, must be spelt ***Malacopteron magnirostre cinereocapilla,*** and should not be changed to *M. m. cinereocapillum.*
174. *Syma fulvicapilla* Vieillot, 1817, must be spelt ***Cisticola fulvicapilla***, and should not be changed to *C. fulvicapillus.*
175. *Sylvia ignicapilla* Temminck, 1820, must be spelt ***Regulus ignicapilla*** [as per e.g. Hartert (1903-1923)], and should not be changed to *R. ignicapillus* [as in Peters (1986), etc.].
176. *Dicaeum ignicapilla* Eyton, 1839, must be spelt ***Prionochilus percussus ignicapilla***, and should not be changed to *P. p. ignicapillus.*
177. *Dendrornis lineatocapilla* Berlepsch & Leverkühn, 1890, must be spelt ***Xiphorhynchus ocellatus lineatocapilla,*** and should not be changed to *X. l. lineatocapillus.*

178. *Cacatua roseicapilla* Vieillot, 1817, must be spelt ***Eolophus roseicapilla***, and should not be changed to *E. roseicapillus*.
179. *Columba roseicapilla* Lesson, 1831, must be spelt ***Ptilinopus roseicapilla***, and should not be changed to *P. roseicapillus*.
180. *M*[*otacilla*] *Rubicapilla* Tickell, 1833, must be spelt ***Macronous gularis rubicapilla*** [as per Howard & Moore (1994)] or ***Mixornis gularis rubicapilla***, and should not be changed to *Macronous g. rubicapillus* [as in Peters (1964), etc.] or *Mixornis g. rubicapillus* [as in Wolters (1982)].
181. *Pogonocichla ruficapilla* Sundevall, 1850, must be spelt ***Phylloscopus ruficapilla***, or ***Pindalus ruficapilla***, and should not be changed to *Phylloscopus ruficapillus* [as in Clements (2000)], or *Pindalus ruficapillus* [as in Wolters (1982)].
182. *Drymoica subruficapilla* Smith, 1843, must be spelt ***Cisticola subruficapilla***, and should not be changed to *C. subruficapillus*.

N) LATINIZED NOUNS

Latinized nouns are always invariable (ICZN 1999, 31.2.1, 32.3, 34.2.1). Examples include *Fringilla spinus* Linnaeus, 1758 [now *Carduelis spinus*], in which *spinus* is the latinized Greek noun σπινος [spinos: a bird]. Therefore:

183. *Corvus Cyanus* Pallas, 1776, must be spelt ***Cyanopica cyanus***, and should not be changed to *Cyanopica cyana*. The name *cyanus* is the latinized Greek noun κυανος [kuanos: a blue substance, a blue stone, a blue bird (Liddell & Scott 1996)], and is not to be confused with the Latin adjective *cyaneus* (*-a, -um*) [blue] or the Greek adjective κυανεος [kuaneos: blue], latinized in *cyaneus* (*-a, -um*).
184. *Trochilus cyanus* Vieillot, 1818, must be spelt ***Hylocharis cyanus***, and should not be changed to *H. cyana*. See # 183 above.

O) LATINIZED NOUN PHRASES

Some names (such as *purpuroptera, nigricephala*, etc.) may look like latinized Greek adjectives at first glance (see Section D above), but their Latin initial components cannot be part of Greek adjectives. Since they end in a latinized Greek noun, such names are noun phrases, and the original spelling is to be retained, with gender ending unchanged (ICZN 1999, Art. 31.2.1, 32.3, 34.2.1, Glossary: noun phrase). Therefore:

185. ***Lamprotornis purpuroptera*** Rüppell, 1845, must remain as is, and should not be changed to *L. purpuropterus*. The component *ptera* is the Greek noun πτερον [pteron: wing] latinized with a feminine ending. The adjectival form would have been *purpuralaris* (Latin) or *porphyroptera* (latinized from Greek).
186. *Phoenicura caeruleocephala* Vigors, 1831, must be spelt ***Phoenicurus caeruleocephala***, and should not be changed to *P. caeruleocephalus*. The final component *cephala* is the latinized Greek noun κεφαλη [kephale: head]. The adjectival form would have *caeruleocapitata* (Latin) or *cyanocephala* (latinized from Greek). Similarly, *Tangara nigricephala* Jameson, 1835, must be spelt

Spindalis nigricephala, and should not be changed to *S. nigricephalus* [as in Raffaele *et al.* (1998)]; its adjectival form would have been *nigricapitata* (Latin) or *melanocephala* (latinized from Greek).

187. *Garrulus viridi-cyanus* Lafresnaye & d'Orbigny, 1838, must be spelt ***Cyanolyca viridicyanus***, and should not be changed to *C. viridicyana*. The final component *cyanus* is the latinized Greek noun κυανος [kuanos: a blue substance, a blue stone, a blue bird (see # 183 above)]. The adjectival form would have been *viridicyaneus* (Latin) or *chlorocyaneus* (latinized from Greek).
188. *Trochilus bilophus* Temminck, 1820, must be spelt ***Heliactin bilophus***, and should not be changed to *H. bilophum* [as in Sibley & Monroe (1990)] or *H. bilopha* [as in del Hoyo *et al.* (1999)]. Since the adverbial stem *bi-* is Latin, it cannot be part of a Greek adjective. The final component *lophus* is here the latinized Greek noun λοφος [lophos: crest]. The adjectival form would have been *bicristatus* (Latin) or *dilophus* (latinized from Greek).

Neither Latin nor latinized names

Original species-group names that are or that end in a word that is neither Latin nor latinized need not agree in gender with the generic name with which they are combined, and the original spelling is to be retained, with ending unchanged (ICZN 1999, Art. 31.2.3).

P) NEITHER LATIN NOR LATINIZED WORDS

Transliterated words from the ancient Greek account for a good part of the names that are neither Latin nor latinized. Thus, whether nouns or adjectives, all names that are or end in a word transliterated from a language other than Latin are invariable. Therefore:

189. ***Zosterops citrinella*** Bonaparte, 1851, must remain as is, and should not be changed to *Z. citrinellus*. The name *citrinella* is an Italian word (Jobling 1991); this is why *Fringilla citrinella* Pallas, 1764, is universally known as *Serinus citrinella*.
190. *Ornismyia lumachella* Lesson, 1838, must be spelt ***Augastes lumachella***, and should not be changed to *A. lumachellus*, since *lumachella* is an Italian word (Jobling 1991).
191. *Myrm*[*ornis*] *arada* Hermann, 1783, must be spelt ***Cyphorhinus arada***, and should not be changed to *C. aradus*. The word *arada* is a native name "often wrongly made to agree in gender" (Jobling 1991).
192. *Drymoica cherina* Smith, 1843, must be spelt ***Cisticola cherina***, and should not be changed to *C. cherinus*. *Cherina* is a local vernacular name (Dowsett & Dowsett-Lemaire 1993).
193. *Drymoica chiniana* Smith, 1843, must be spelt ***Cisticola chiniana***, and should not be changed to *C. chinianus*. *Chiniana* is a local vernacular name (Clancey 1992).

194. *Lanius melas* Lesson, 1828, must be spelt ***Coracina melas*** or ***Edolisoma melas,*** and should not be changed to *C. melaena* [as in Peters (1960)], or *E. melan* [as in Wolters (1982)]. The Greek adjective μελας [melas: black] is the very example of a name that must remain unchanged (ICZN 1999, Art. 31.2.3 Example).

195. *Tachyphonus chrysomelas* Sclater & Salvin, 1869, must be spelt ***Chrysothlypis chrysomelas,*** and should not be changed to *C. chrysomelaena* [as in AOU (1998: 571)]. See # 194 above.

196. *Tanagra cyanomelas* Wied, 1830, must be spelt ***Tangara velia cyanomelas***, and should not be changed to *T. v. cyanomelaena.* See # 194 above.

197. *Hirundo holomelas* Sundevall, 1850, must be spelt ***Psalidoprocne holomelas,*** and should not be changed to *P. holomelaena.* See # 194 above.

198. *Bucco leucomelas* Boddaert, 1783, must be spelt ***Tricholaema leucomelas*** [as per Dowsett (1989)], and should not be changed to *T. leucomelan* [as in Peters (1948)], *T. leucomelaena* [as in Wolters (1982)], or *T. leucomelaina* [as in Fry *et al.* (1988)]. See # 194 above.

199. *Ierax melanoleucos* Blyth, 1843, must be spelt ***Microhierax melanoleucos*** [as per Peters (1931)], and should not be changed to *M. melanoleucus* [as in Peters (1979a), etc.].

200. *Myiolestes megarhynchos* [sic] *neos* Mayr, 1931, must be spelt ***Colluricincla megarhyncha neos,*** and should not be changed to *C. m. nea.*

201. *Picus erithronothos* Vieillot, 1818, must be spelt ***Dinopium benghalense erithronothos*** or ***Brachypternus benghalensis erithronothos,*** and should not be changed to *D. b. erithronothon* [as in Peters (1948)] or *B. b. erithronotus* [as in Wolters (1982)].

202. *Eopsaltria chrysorrhos* Gould, 1869, must be spelt ***Eopsaltria australis chrysorrhos,*** and should not be changed to *E. a. chrysorrhoa.*

203. *Coracia erythroramphos* Vieillot, 1817, must be spelt ***Pyrrhocorax pyrrhocorax erythroramphos,*** and should not be changed to *P. p. erythrorhamphus.*

204. ***Emberiza leucocephalos*** Gmelin, 1771, must remain as is, and should not be changed to *E. leucocephala.*

205. ***Bonasa umbellus phaios*** Aldrich & Friedmann, 1943, must remain as is, and should not be changed to *B. u. phaia.*

206. ***Zosterops xanthochroa*** Gray, 1859, must remain as is, and should not be changed to *Z. xanthochrous.* The feminine forms of latinized Greek adjectives such as *xanthochrous* (*-a, -um*) have the same ending as the transliterated Greek nouns from which they are derived (i.e. chroa, see Table 1). Since original names that end in *chroa, chroma, mitra, oura, pareia, pleura, soma, stigma* and *stoma* happen to have transliterated Greek nouns as final components, they are to be treated as indeclinable (ICZN 1999, Art. 31.2.3). This is why, for example, *Dicaeum trigonostigma megastoma* Hartert, 1918, has remained unchanged. On the other hand, original names that end in *-chrous, -chroum, -chromus, -chromum, -mitrus, -mitrum, -ourus, -ourum, -pareius, -pareium, -pleurus, -pleurum, -somus, -somum, -stigmus, -stigmum, -stomus* and *-stomum* are generally latinized Greek adjec-

tives, and are variable (see Sections C, D, and O above). Knowledge of the original name combination is always necessary for resolving such cases.

207. *Fringilla rodochroa* Vigors, 1831, must be spelt ***Carpodacus rodochroa,*** and should not be changed to *C. rodochrous* [as in Sibley & Monroe (1990)] or *C. rhodochrous* [as in Peters (1968), etc.]. See # 206 above.
208. *Cisticola pyrrhomitra* Reichenow, 1916, must be spelt ***Cisticola erythrops pyrrhomitra,*** and should not be changed to *C. e. pyrrhomitrus.* See # 206 above.
209. *Loxia macroura* Gmelin, 1789, must be spelt ***Coliuspasser macroura*** [as per e.g. Reichenow (1900-1905)] or ***Euplectes macroura,*** and should not be changed to *C. macrourus* [as in Wolters (1982)] or *E. macrourus* [as in Peters (1968), etc.]. The name *macroura* ends in the transliterated Greek noun ουρα [oura: tail], and is to be retained with ending unchanged (see # 206 above). However, Greek adjectives that end in -ουρος [-ouros: -tailed], when properly latinized in *-urus* (*-ura, -urum*) [ICZN 1985: 186], are variable since the latinized adjectival ending *-ura* is not the transliterated noun oura (see Table 1). This is why *Loxia melanura* Müller, 1773, is now known as *Passer melanurus,* and why *Trogon melanurus macroura,* Gould, 1838, is spelt correctly, and has always remained as is (see also # 99-100 above). On the other hand, in original names such as *macrourus,* from μακρουρος [makrouros: long-tailed], only the -os ending has been latinized, but the name still qualifies as a latinized adjective (ICZN 1999, Glossary: latinize); this is why *Trochilus macrourus* Gmelin, 1788, is now known correctly as *Eupetomena macroura.* Knowledge of the original combination is always necessary for resolving such cases.
210. *Argya amauroura* Pelzeln, 1883, must be spelt ***Melocichla mentalis amauroura,*** and should not be changed to *M. m. amaurourus.* See # 209 above.

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APPENDIX

Usage of names quoted in the present paper.

The authors are: P = Peters (1934-1986); W = Wolters (1982); S = Sibley & Monroe (1990); H = Howard & Moore (1994); D = del Hoyo *et al.* (1992-1999); C = Clements (2000).
Y: the correct spelling is used; n: an incorrect spelling is used; – : another combination is used; [blank]: the taxon is not treated.

Correct spelling (number refers to text) **Authors :**	**P**	**W**	**S**	**H**	**D**	**C**
Acrocephalus luscinius (122)	n	n	n	n		n
Actenoides monachus (124)	–	**Y**	**Y**	n		**Y**
Aethopyga primigenia (29)	n	–	n	n		n
Aglaiocercus kingi caudatus (10)	n	n		n	**Y**	**Y**
Alcedo cyanopectus (134)	–	–	n	–		n
Alcedo meninting rufigastra (158)	n	n		n		n
Alcippe morrisonia fratercula (153)	n	n		n		n
Amaurornis flavirostra (166)	–	–	**Y**	–	n	n
Amaurornis moluccana ruficrissa / A. olivacea ruficrissa (140)	**Y**	n		n	n	n
Ammodramus caudacutus alter / A. nelsoni alter (8)	n			n		n
Ammodramus maritimus pelonotus (83)	n			n		n
Andigena nigrirostris spilorhyncha (110)	n	n		n		n
Anisognathus igniventris ignicrissa (138)	n	n		n		n
Apaloderma narina littorale (45)	n			n		**Y**
Aplonis brunneicapillus (143)	n	–	n	n		n
Apus acuticauda (131)	n	**Y**	**Y**	**Y**	**Y**	**Y**
Aratinga auricapillus (142)	**Y**	n	n	n	n	n
Attila spadiceus citreopyga (136)	n	n		n		n
Augastes lumachella (190)	n	n	n	n	**Y**	**Y**
Bleda canicapillus (146)	n	n	n	n		n
Bonasa umbellus castanea (43)				n	**Y**	**Y**
Bonasa umbellus mediana (4)				n	**Y**	**Y**
Bonasa umbellus phaios (205)				**Y**	n	n
Brachypternus benghalensis erithronothos (200)	–	n				
Bubo bubo hemachalanus (65)	n	**Y**		n	n	n
Bubo sumatranus (61)	n	**Y**	**Y**	n	**Y**	**Y**
Buteogallus anthracinus cancrivorus (36)	–				n	
Callipepla californica decolorata (12)				**Y**	n	n
Cardinalis cardinalis flammiger (1)	n	**Y**		n		n

Carpodacus edwardsii rubicundus (31)	n	–		n		n
Carpodacus rodochroa (207)	n	n	n	n		n
Carpodacus rubicilla diabolicus (13)	n			n		n
Catharus fuscescens fuliginosus (18)	n	**Y**		n		n
Cecropis daurica melanocrissus (141)	–	n		–		–
Celeus elegans jumanus (66)	n	n	n	n		n
Cepphus columba adiantus (75)					n	n
Ceratogymna cylindrica (71)	–	–	n	n		n
Ceratogymna subcylindrica (72)	–	–	n	n		n
Cettia brunnifrons umbratica (35)	n			**Y**		n
Ceyx erithaca (152)	n	n	n	n		n
Ceyx rufidorsa (156)	n	n	**Y**	n		**Y**
Chaetura spinicaudus (163)	n	n	n	n	n	n
Chalcostigma stanleyi versigulare (56)	n			n	n	n
Cheramoeca leucosterna (77)	n	n	n	n		n
Chlidonias hybrida (120)	**Y**	**Y**	n	**Y**	n	n
Chlorostilbon stenurus (100)	n	n	n	n	**Y**	**Y**
Chlorostilbon stenurus ignotus (2)	n	**Y**		n	**Y**	**Y**
Chrysothlypis chrysomelas (195)	**Y**	**Y**	**Y**	**Y**		n
Ciccaba albitarsis (59)	n	–	–	n	–	n
Cinclosoma castanotum (104)	**Y**	**Y**	n	**Y**		n
Cinnyris jugularis flavigastra (160)	–	–		–		n
Cisticola angusticauda (130)	**Y**	–	**Y**	**Y**		n
Cisticola cherina (192)	**Y**	**Y**	n	**Y**		n
Cisticola chiniana (193)	**Y**	–	n	**Y**		**Y**
Cisticola erythrops pyrrhomitra (208)	**Y**	–		**Y**		n
Cisticola fulvicapilla (174)	**Y**	–	n	**Y**		n
Cisticola subruficapilla (182)	**Y**	–	n	**Y**		n
Cladorhynchus leucocephalus (95)	n	**Y**	**Y**	**Y**	**Y**	**Y**
Clytorhynchus vitiensis vatuanus (68)	n			n		n
Colaptes rupicola cinereicapillus (148)	**Y**			n		**Y**
Coliuspasser macroura (209)	–	n	–	–		–
Collocalia leucophaea (76)	**Y**	**Y**	n	–	–	–
Collocalia spodiopygia (85)	**Y**	**Y**	n	–	–	–
Colluricincla megarhyncha hybridus (154)	n			n		n
Colluricincla megarhyncha neos (200)	n			n		n
Columba guinea phaeonota (103)	n	n		**Y**	n	**Y**
Columba livia gymnocycla (107)	n	n		n	n	n
Conirostrum bicolor minus (23)	n	n		n		n
Conirostrum leucogenys cyanochroum (86)	n			n		n
Coracina melas (194)	n	–	**Y**	**Y**		**Y**
Coracina novaehollandiae larvivora (37)	n	**Y**		n		**Y**
Coturnix ypsilophora plumbea (28)				n	n	n
Crypturellus obsoletus hypochraceus (20)	n			n	n	n
Crypturellus tataupa peruvianus (67)	n			n	n	n
Cyanolyca viridicyanus (187)	n	n	n	n		n
Cyanopica cyanus (183)	n	**Y**	n	n		n
Cygnus melancoryphus (96)	n	–	n	n	n	n
Cyornis rufigastra (159)	–	n	n	–		**Y**
Cyphorhinus arada (191)	n	**Y**	n	n		n
Cyrtostomus jugularis flavigastra (160)	–	n		–		–

Dinopium benghalense erithronothos (201)	n	–				
Discosura longicaudus (161)	n	n	n	n	n	n
Donacobius atricapilla (127)	n	n	n	n		n
Edolisoma melas (194)	–	n	–	–		–
Electron platyrhynchum minus (24)	n	n		n		n
Emberiza leucocephalos (204)	**Y**	**Y**	**Y**	n		**Y**
Emblema pictum (50)	n	n	**Y**	**Y**		**Y**
Eolophus roseicapilla (178)	–	n	n	n	n	n
Eopsaltria australis chrysorrhos (202)	n	n	**Y**	n		n
Euplectes macroura (209)	n	–	n	n		n
Falco berigora tasmanicus (58)	n			n		
Falco moluccensis microbalius (69)	n			n	n	n
Gallicolumba crinigera (38)	n	n	n	n	n	n
Gerygone chloronota (102)	**Y**	**Y**	n	**Y**		n
Gerygone levigaster cantator (117)	n	**Y**	**Y**	**Y**		**Y**
Grallaria andicolus (165)	n	n	n	n		n
Halcyon monachus (124)	n	–	–	–		–
Halcyon princeps erythrorhampha (109)	n	–		–		–
Halcyon senegalensis fuscopileus (135)	n	n		n		n
Halcyon chloris colonus (118)	n	–		n		–
Heliactin bilophus (188)	–	n	n	–	n	n
Hemispingus superciliaris leucogastrus (115)	n	n	n	n		n
Hirundo daurica melanocrissus (141)	n	–	**Y**	n		n
Hydropsalis brasiliana [= *torquata*] *furcifer* (119)	n	n		n	n	n
Hylocharis cyanus (184)	**Y**	n	**Y**	**Y**	**Y**	**Y**
Hypsipetes flavala (129)	**Y**	–	–	n		–
Illadopsis fulvescens dilutior (14)	–	**Y**		n		n
Irena cyanogastra (112)	n	n	n	n		n
Irena puella crinigera (39)	n	n		n		n
Jotreron hyogastrus (114)	–	n	–	–	–	–
Jotreron melanospilus (90)	–	n	–	–	–	–
Jotreron melanospilus chrysorrhous (91)	–	n		–	–	–
Jotreron melanospilus xanthorrhous (92)	–	n		–	–	–
Lamprotornis purpuroptera (185)	n	n	n	n		n
Leptotila plumbeiceps notia (48)	n			n	n	n
Leucippus fallax cervinus (11)	n			n	n	
Limnocorax flavirostra (166)	**Y**	n	–	–	–	–
Lonchura malacca rubronigra (26)	n	n		n		n
Lorius albidinucha (132)	–	**Y**	n	n	n	n
Macronous gularis rubicapilla (180)	n	n		**Y**		n
Malacocincla abbotti obscurior (5)	–	n		n		n
Malacocincla sepiaria (32)	**Y**	**Y**	n	**Y**		n
Malacopteron magnirostre cinereocapilla (173)	n	n		n		n
Megalaima australis gigantorhina (97)	n			n		n
Megalaima rubricapillus (150)	n	–	n	n		n
Megascops atricapilla (128)	–	n	–	–	–	–
Melocichla mentalis amauroura (210)	n	n		n		n
Melocichla mentalis incana (3)	n			n		**Y**
Microhierax melanoleucos (199)	n	**Y**	n	n	n	n
Mionectes oleagineus maynanus (60)	n			n		n
Mixornis gularis rubicapilla (180)	–	n		–		–

Monarcha chrysomela nitidus (27)	n			n		n
Monarcha chrysomela pulcherrimus (51)	**Y**	–		n		n
Myioborus castaneocapilla (171)	n	n	n	n		n
Nectarinia habessinica altera (6)	n			n		–
Nectarinia jugularis flavigastra (160)	n	–		n		–
Neochelidon tibialis minima (46)	n	**Y**		n		**Y**
Neocrex columbiana (63)	n	**Y**	n	–	n	n
Neophema chrysostoma (70)	n	**Y**	**Y**	**Y**	**Y**	**Y**
Nesillas aldabrana (62)	n	n	**Y**	n		**Y**
Nesoclopeus poecilopterus (74)	n	**Y**	**Y**	**Y**	**Y**	**Y**
Nigrita canicapillus (145)	n	n	n	n		n
Oenanthe albonigra (25)	n	n	n	n		n
Ornithion brunneicapillus (144)	n	–	n	n		n
Ortalis ruficauda baliola (42)	**Y**			n	n	
Otus atricapilla (128)	n	–	n	n	n	n
Otyphantes nigrimentus (157)	–	n	–	–		–
Pachycephala leucogastra (111)	n	**Y**	**Y**	**Y**		**Y**
Pachycephala melanura spinicaudus / P. pectoralis spinicaudus (164)	n	n	n	n		n
Pachycephala pectoralis macrorhyncha (79)	n	**Y**		n		n
Pachycephala phaionota (101)	**Y**	**Y**	n	**Y**		n
Pachyptila desolata altera (7)	n			n	n	n
Paramythia montium alpina (41)	n	**Y**		n		n
Paramythia montium olivacea (49)	n	**Y**	n	n		n
Parisoma layardi subsolanum (53)	n	**Y**		n		n
Parus palustris hypermelaenus (73)	n	–	n	n		–
Pelargopsis amauroptera (89)	**Y**	**Y**	n	–		n
Pelecanoides urinatrix (155)	n	n	n	n	**Y**	**Y**
Pellorneum fuscocapillus (149)	n	n	n	n		n
Pellorneum pyrrogenys canicapillus (147)	–	–		n		n
Phaenicophaeus leschenaultii infuscatus (21)	–	–		–	n	**Y**
Phaethon rubricauda roseotinctus (54)	n			n	n	n
Phalaropus fulicarius (17)	**Y**	**Y**	n	**Y**	n	n
Phoenicurus caeruleocephala (186)	n	–	n	n		n
Phoenicurus erythrogastrus (113)	n	n	n	n		n
Phoenicurus erythronotus (82)	**Y**	–	n	**Y**		n
Phylloscopus ruficapilla (181)	**Y**	–	**Y**	**Y**		n
Pindalus ruficapilla (181)	–	n	–	–		–
Pipra pipra minima (47)	n			**Y**		n
Platycercus elegans melanopterus (78)	n	**Y**		n	n	n
Platycichla flavipes xanthoscela (98)	n	–		n		n
Ploceus nigrimentus (157)	n	–	n	n		n
Ploceus pelzelni monacha (123)	n	–	n	n		n
Poecile atricapillus (151)	–	n	–	–		**Y**
Poecilotriccus capitalis (9)	n	–	**Y**	n		**Y**
Pogoniulus bilineatus leucolaimus (81)	n	–	n	n		n
Polyplectron malacense (57)	n	**Y**	**Y**	**Y**	**Y**	**Y**
Prinia crinigera (40)	n	n	n	n		n
Prionochilus percussus ignicapilla (176)	**Y**	n		**Y**		n
Psalidoprocne holomelas (197)	n	n	**Y**	**Y**		**Y**
Pteruthius xanthochlorus hybrida (121)	n	–		n		n
Ptilinopus hyogastrus (114)	n	–	n	n	n	n

Ptilinopus magnificus interpositus (22)	–			n	n	n
Ptilinopus magnificus poliurus (99)	–	–		n	n	n
Ptilinopus melanospilus (90)	n	–	n	n	n	n
Ptilinopus melanospilus chrysorrhous (91)	n	–		n	n	n
Ptilinopus melanospilus xanthorrhous (92)	n	–		n	n	n
Ptilinopus roseicapilla (179)	**Y**	n	**Y**	**Y**	**Y**	**Y**
Ptilinopus viridis geelvinckianus (64)	n	**Y**	n	n	n	n
Ptilorrhoa caerulescens nigricrissus (139)	n	n		n		n
Pyrrhocorax pyrrhocorax erythroramphos (203)	n	n		n		n
Ramphomicron microrhynchum andicola (137)	n			n	n	n
Regulus ignicapilla (175)	n	n	n	n		n
Seiurus aurocapilla (169)	n	n	n	n		n
Sericornis magnirostra (167)	n	n	n	n		n
Serinus gularis canicapilla (170)	**Y**	–		**Y**		n
Serinus leucolaemus (87)	n		n	n		n
Serinus xantholaemus (88)		–	n			n
Stactolaema whytii terminata (55)		–		n		n
Sthenelides melancoryphus (96)	–	n	–	–	–	–
Streptopelia decaocto xanthocycla (106)	n	n		n	n	n
Strix albitarsis (59)	–	**Y**	n	–	**Y**	–
Tangara velia cyanomelas (196)	n	n	n	n		n
Thalasseus bengalensis emigratus (15)					n	
Thalasseus sandvicensis eurygnathus (80)	n	**Y**	–	n	n	–
Thalassornis leuconotus (93)	**Y**	**Y**	**Y**	**Y**	n	**Y**
Todiramphus chloris colonus (118)	–			–		n
Todiramphus pyrrhopygius (84)	–	**Y**	n	–		n
Todiramphus tutus (34)	–	**Y**	n	–		n
Todirostrum chrysocrotaphum simile (52)	n			n		n
Todirostrum plumbeiceps cinereipectus (133)	n			n		n
Trichastoma pyrrogenys canicapillus (147)	n	n		–		–
Trichixos pyrropygus (108)	–	n	n	–		n
Tricholaema leucomelas (198)	n	n	**Y**	**Y**		**Y**
Tyrannus forficatus (16)	n	**Y**	**Y**	**Y**		**Y**
Tyto capensis librata (44)	n			n	n	
Upucerthia ruficaudus (162)	n	n	n	n		n
Uraeginthus cyanocephalus (94)	n	**Y**	**Y**	n		**Y**
Uraeginthus granatinus (19)	n		n	n		n
Uraeginthus granatinus retusus (30)	n			n		n
Uraeginthus granatinus siccatus (33)	n			n		n
Vireo atricapilla (126)	n	n	n	n		n
Viridibucco bilineatus leucolaimus (81)	–	n	–	–		–
Xantholaema rubricapillus (150)	–	n	–	–		–
Xiphorhynchus ocellatus lineatocapilla (177)	n			n		n
Zimmerius cinereicapilla (172)	n	–	n	n		n
Zoothera citrina cyanota (105)	n	n		n		n
Zosterops atricapilla (125)	**Y**	n	n	**Y**		n
Zosterops citrinella (189)	**Y**	**Y**	n	**Y**		n
Zosterops fuscicapilla (168)	**Y**	n	n	**Y**		n
Zosterops poliogastrus (116)	n	n	n	n		n
Zosterops xanthochroa (206)	**Y**	n	n	**Y**		n

Taxonomy of the Kelp Gull *Larus dominicanus* Lichtenstein inferred from biometrics and wing plumage pattern, including two previously undescribed subspecies

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The Kelp Gull's *Larus dominicanus* Lichtenstein extensive range discontinuously encircles the globe in a broad subantarctic belt, where breeding occurs mainly on isolated islands. By contrast, Kelp Gulls also breed on continental South America where their latitudinal range extends over *c.* 60º, reaching a northern limit at the equator (Higgins & Davies 1996, Haase 1996). The species breeds in South America (including the Falklands and South Georgia, and north to Ecuador on the west coast and in Brazil to 26°S on the east coast), Antarctica (and South Shetlands, South Orkneys, South Sandwich Islands), New Zealand, New Zealand islands, Macquarie Island, Australia, southern Africa, southern Madagascar and subantarctic Indian Ocean (Kerguelen, Crozet, Heard, Marion and Prince Edward Islands). There have been no detailed studies of geographical variation in the species, and populations have not proved to separate clearly into subspecies on the basis of measurements (Dwight 1925), but Higgins & Davies (1996) suggested that latitudinal and longitudinal analyses of measurements might reveal clines. Kinsky (1963) considered, from measurements of New Zealand birds, that all measurements increase up to three years old; though often quoted in later literature, this was never tested statistically.

The Kelp Gull has customarily been divided into two subspecies (Brooke & Cooper 1979): *L. d. vetula* breeding in South Africa and Namibia and recognised by its large size and dark iris in breeding adults (Brooke & Cooper 1979), and the nominate subspecies breeding in all other locations. Birds from Madagascar are of unknown status (Brooke & Cooper 1979, Morris & Hawkins 1998, Sinclair & Langrand 1998). Previous studies of geographical variation in this species have considered biometrics and iris colouration, but not plumage characters. However, Jiguet *et al.* (2001) recently illustrated the existence of marked geographical variation in primary pattern and bare parts colouration. Nominate birds show the classic wing pattern of the species: one white mirror - on the longest outermost primary - and an average of two white tongues on median primaries, isolating the black tip of the feather on the inner web.

In this study, I first investigate the relationship between biometrics and age in one population, in order to test Kinsky's (1963) hypothesis. I also investigate latitudinal clinal variation of biometrics for populations inhabiting South America. I finally segregate birds of different geographical origin using biometrics alone, or biometrics and wing pattern, and identify groups that could correspond to distinct subspecies.

Material and methods

Study material

Birds used in the analyses were the 243 specimens held at the Muséum national d'Histoire naturelle, Paris, France (MNHN) and the Natural History Museum, Tring, UK (BMNH). Each bird was referenced according to the locality of collection. Not all specimens were sexed, so sample sizes used in the analyses vary according whether sex is taken into account. One specimen preserved at the BMNH, said to have been collected in South Africa, was part of the Meinertzhagen collection (registration n° 1965/m/3982). Due to concerns over the mis-labelling of Meinertzhagen specimens (Knox 1993), this was excluded from further analyses on biometrics, but was included in principal components and discriminant analyses to verify its geographical origin.

Biometrics and wing pattern

Maximum wing chord, tarsus length, culmen length, bill depth at gonys and bill depth at the base of the nostrils were measured (nearest mm) by the author on all specimens. Birds in active moult of the longest primaries were excluded from analyses involving wing length. Two wing plumage characters of adult birds were recorded (Fig. 1): (1) the number of white mirrors on the two longest primaries (primaries numbered decendantly; recorded as 1 if present on P10 only; 1.5 if present on P10 and very restricted on P9; 2 if obviously present on both P9 and P10); (2) the number of white tongues between black tip and sooty black base on median primaries from P4 outwards (range 1-3).

Age-related variations in biometrics

To test whether size increases with age (Kinsky 1963), only males from subantarctic Indian Ocean islands provided an adequate sample of known-age birds. Twenty-four birds available were 7 first-, 3 second-, 5 third-years and 9 adults. Their biometrics were compared using Kruskal-Wallis tests.

Latitudinal variations in biometrics

Clinal variations of biometrics (tarsus and wing lengths) were sought in Kelp Gulls from South America, involving birds collected from 6°S (Lobos de Tierra, off Peru) to 56°S (Cape Horn, Patagonia), and including the Falklands and South Georgia. Only adult birds were considered to limit the inclusion of vagrant birds, as non-breeding immature birds are more inclined to disperse than adults (Higgins & Davies 1996). Pearson's correlation coefficients between biometric variables and latitude of collection were calculated for each sex.

Geographical variations

Univariate and descriptive statistics (Analysis of Variance) of biometrics and multivariate statistics (Principal Components Analysis, Multiple Analysis of Variance and Discriminant Analysis) of biometrics alone or both biometrics and wing plumage variables were used to look for geographical variations.

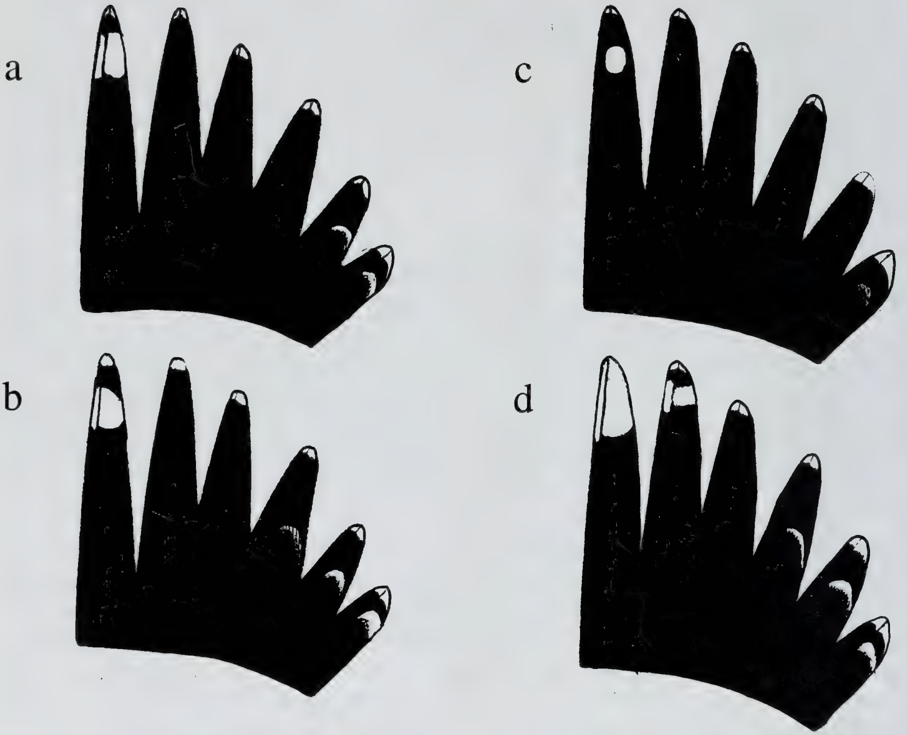


Figure 1. Outer primary pattern (from P5 to P10, primaries numbered descendantly) of adult Kelp Gulls *Larus dominicanus* from different geographical origins, to show how the mirror and tongue scores were recorded. a) a nominate *dominicanus* from eastern South America (mirror score MS 1, tongue score TS 2); b) an Antarctic bird (MS 1, TS 3); c) a Malagasy bird (MS 1, TS 1); d) a bird from Kerguelen (MS 2, TS 3)

I performed two different Principal Component Analyses (PCA). In a first PCA, I considered only the five biometric variables, for birds at least 3 years old (as some measurements increase until this age, see Kinsky (1963) and below). In a second PCA, I included both biometrics and wing plumage variables for adults only.

I further used parametric Discriminant Analysis and an error rate estimate in classification - the jack-knife cross-validation technique (Wilkinson 1990) - to test how birds from geographically distinct origins discriminate. This technique provides an upper limit of error count estimates. The jack-knife classification matrix uses functions computed from all data except the case being classified. I performed two different discriminant analyses involving only adult birds. The first involved only biometrics, the second biometrics and plumage variables. The locations of collection were grouped into ten different global areas that are well separated geographically: southern Africa, eastern South America (from 23° to 34°S: north Argentina, Brazil and Paraguay, where the nominate form *L. d. dominicanus* is supposed to occur), western South America (from 6° to 41°S: Peru, north and central Chile), Patagonia (from 51° to 56°S: southern Argentina and southern Chile, i.e. southern South America), Falkland Islands (52°S), South Georgia (55°S), Antarctica (64-65°S), New Zealand, Madagascar and subantarctic Indian Ocean islands (Kerguelen, Crozet and Heard Islands). Adult birds of both sexes and of unknown sex were used together in the discriminant analyses. Therefore, populations that would highly discriminate should be controlled for sex-ratio, to verify that they are not totally biased towards one sex, and that the statistical model is not merely discriminating males and females. Unfortunately, sample sizes were too small to separate sexes in the multivariate analyses.

All statistical analyses were performed using SYSTAT (Wilkinson 1990). Statistical tests were considered significant at $P < 0.05$.

Results

Age-related and latitudinal variations in Kelp Gull biometrics

The biometrics of males of different ages from the subantarctic Indian Ocean islands revealed that neither wing chord ($df = 3$; $H = 3.45$, $P = 0.327$), nor tarsus ($H = 0.94$, $P = 0.816$) nor culmen length ($H = 4.94$, $P = 0.176$) varied with age. Only bill depth increased with age ($H = 12.68$, $P = 0.005$ for depth at gonys, and $H = 10.83$, $P = 0.013$ for depth at nostrils), but no significant differences remained between 3-year old and adult birds ($df = 1$; $H = 3.24$, $P > 0.1$ for gonys, and $H = 0.04$, $P > 0.8$ for nostrils). For these reasons, further univariate analyses involving wing chord, tarsus and culmen lengths include data on birds of all ages mixed (from fully grown juveniles to adults), while those involving bill depths include only data on birds at least three years old. All multivariate analyses use only data on adult birds.

Pearson's correlation coefficients between biometric variables and latitude of collection for each sex of Kelp Gull in South America showed that culmen length varied significantly with latitude in both males and females, with the longest culmen in the north, the shortest in the south (Table 1). Wing chord was not significantly related to latitude, while tarsus was weakly so for females.

Biometrics, wing plumage pattern and geographical location of origin

I found differences in biometrics when comparing birds from different populations using univariate statistics, with most differences concerning wing and culmen lengths

TABLE 1

Pearson's correlation coefficient between latitude and biometric variables in adult male (n = 33) and female (n = 22) Kelp Gulls of South America, from Peru to Patagonia (including the Falklands and South Georgia). P values are two-tailed, and values in bold are still significant after Bonferroni correction.

	Male		Female	
Variable	r	P	r	P
Wing	-0.085	n.s.	-0.119	n.s.
Tarsus	-0.145	n.s.	-0.540	< 0.01
Exposed culmen	-0.619	**< 0.001**	-0.637	**< 0.002**
Gonys depth	0.098	n.s.	-0.022	n.s.
Nostrils depth	0.088	n.s.	0.102	n.s.

(Table 2; see also Table 6). A Principal Components Analysis, performed to visualise the geographical variations in the five biometric variables for adults (Table 3), did not suggest a clear separation between birds from different origins, or between already recognised subspecies, with large overlaps between all of them (Fig. 2a). However Antarctic birds appeared to separate well on a graph with principal components 1 and 3 as axes (Fig. 2b). I further performed a Discriminant Analysis, considering the ten groups of geographically different origins as different *a priori* groups (Table 4; n =

TABLE 2

Univariate tests comparing biometrics of Kelp Gulls from different populations. See Table 7 for details on biometrics of all populations considered and their name abbreviations.

Sex		Statistic[1]	P	differing populations [2]
Male	Wing length	$F_{9,99} = 11.3$	< 0.001	Ju/Do, Ju/Pa, Ju/Au, Me/Au, Au/Nz, Au/Fa, Au/SA
	Tarsus length	$F_{9,102} = 3.55$	0.001	Ju/Ve
	Exposed culmen	$F_{9,102} = 15.5$	< 0.001	Ju/Ve, Ju/SA, Ju/Me, Me/SG, Do/Fa, Do/SG, Do/Au, Au/Ve, Au/SA, Fa/SG, Fa/SA, Fa/Ve, SG/Ve, SG/Nz, SG/Pa, SG/SA
	Gonys depth	$F_{9,59} = 2.57$	0.014 [3]	-
	Nostril depth	$F_{9,59} = 3.21$	0.030[3]	-
Female	Wing length	$F_{9,83} = 6.89$	< 0.001	Ju/Pa, Ju/Au, Au/Do, Au/Ve, Au/SA, Au/Fa
	Tarsus length	$F_{9,84} = 2.31$	0.023 [3]	-
	Exposed culmen	$F_{9,83} = 10.8$	< 0.001	Ju/Ve, Ju/SA, Ju/Me, Me/Fa, Me/SG, Ve/Fa, Ve/SG, SA/Fa, SA/SG
	Gonys depth	$F_{9,53} = 2.35$	0.026 [3]	-
	Nostril depth	$F_{9,53} = 0.85$	> 0.5	-

1. Comparisons using One-way ANOVA
2. Using Scheffe *a posteriori* test (significance level at 0.05)
3. Not significant after Bonferroni correction

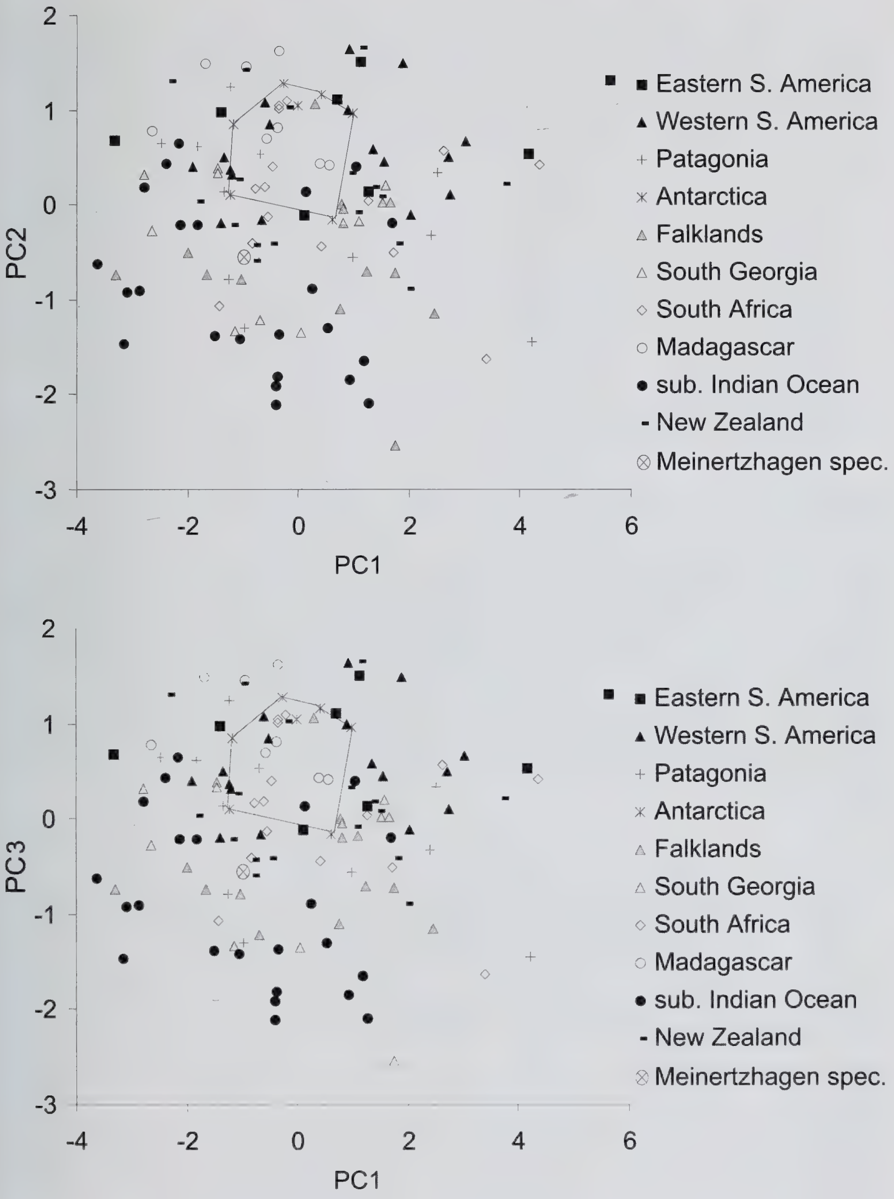


Figure 2. Scatter plots of the first three Principal Components by pairs (a: PC1 and PC2, b: PC1 and PC3), resulting from a PCA performed on 131 adult Kelp Gulls, using five biometric characters. The Antarctic birds are individualized on both figures.

TABLE 3

Results of a Principal Components Analysis performed on 131 adult Kelp Gulls, using five biometric characters. PC1 is positively correlated to all biometric variables, while PC2 is negatively correlated to the bill depths measures and positively to the other three measures.

	PC 1	PC 2	PC 3
Eigen value	3.169	0.859	0.483
% variance explained	63.39	17.18	9.66
Cumulative %	63.39	80.57	90.23
Correlation with axis :			
- Wing	0.748	0.348	-0.532
- Tarsus	0.799	0.315	0.056
- Culmen	0.741	0.411	0.443
- Depth at gonys	0.836	-0.499	0.014
- Depth at nostril	0.850	-0.470	0.016

130 individuals; five biometric variables only). Multivariate Analysis of Variance was highly significant (Wilk's Lambda = 0.120, F = 7.05, df = 45, P < 0.001). Using resubstitution and error count estimates, no individual from Antarctica and South Georgia, and only 12% of Malagasy birds, were mis-classified. As resubstitution gives an optimistic estimate of error rate, we also used cross-validation error rate estimate (with a jack-knife classification matrix), which again correctly classified 100% of Antarctic birds, 88% of Malagasy birds, but 0% of South Georgian birds (though expected as sample size is very small, n = 2). No mis-classified bird from Patagonia was attributed to the Antarctic group. In conclusion, segregation is well achieved between Antarctic and to a lesser degree Malagasy birds and all others on the basis of biometrics.

TABLE 4

Results of a discriminant analysis performed on 130 adult Kelp Gulls (the Meinertzhagen specimen is excluded), using five biometric variables only.

Geographical origin	No. of birds	% correct in classification matrix	% correct in jack-knife classification matrix
eastern South America	8	50	25
western South America	17	35	24
Patagonia	11	45	27
Falklands	22	45	45
South Georgia	2	100	0
Antarctica	7	100	100
New Zealand	17	41	41
Madagascar	8	88	88
South Africa	15	33	27
subantarctic Indian Ocean	23	57	52

TABLE 5

Results of a Principal Components Analysis performed on 131 adult Kelp Gulls, using five biometric and two wing plumage characters. PC1 is positively correlated to all five biometric measures, and negatively to the mirror number. PC2 is positively correlated to the wing plumage variables and bill depth measures, and negatively to the culmen length.

	PC 1	PC 2
Eigen value	3.27	1.51
% variance explained	46.7	21.6
Cumulative %	46.7	68.3
Correlation with axis :		
- Wing	0.771	-0.092
- Tarsus	0.803	-0.043
- Culmen	0.782	-0.381
- Depth at gonys	0.785	0.491
- Depth at nostril	0.805	0.444
- Number of white mirror(s)	-0.375	0.660
- Number of white tongue(s)	-0.132	0.694

The second Principal Components Analysis, that examined geographical variations using biometrics plus the two wing plumage variables for adults (Table 5), suggests a separation between birds from the subantarctic Indian Ocean from all other Indian Ocean populations (Fig. 3). Birds from Madagascar also separate from all other populations, with no overlap, even with birds from the closest populations (subantarctic Indian Ocean and southern Africa). I further performed a Discriminant Analysis, considering again the ten groups from geographically different origins as

TABLE 6

Results of a discriminant analysis performed on 131 adult Kelp Gulls (the Meinertzhagen specimen is included with South African birds), using five biometric and two plumage characters.

Geographical origin	No. of birds	% correct in classification matrix	% correct in jack-knife classification matrix
eastern South America	8	63	38
western South America	17	41	29
Patagonia	11	55	27
Falklands	22	68	59
South Georgia	2	100	0
Antarctica	7	100	100
New Zealand	17	29	24
Madagascar	8	100	100
South Africa	16	38	25
subantarctic Indian Ocean	23	100	100

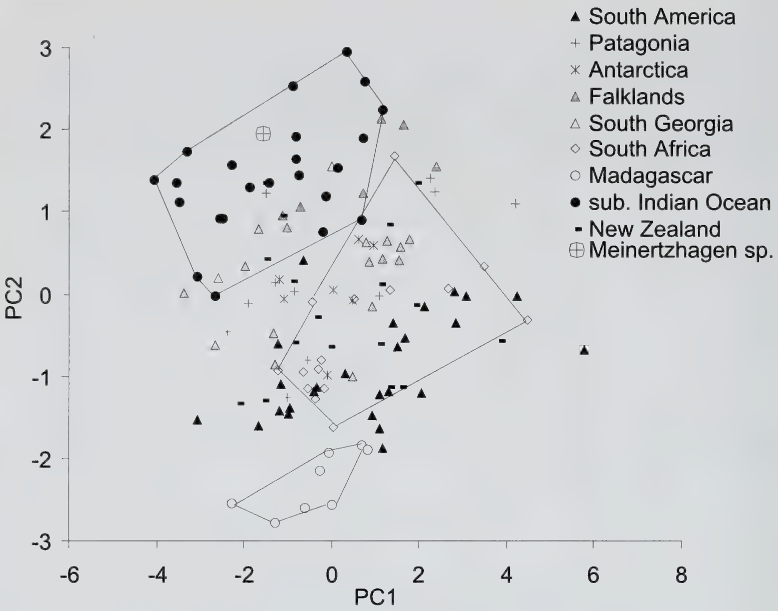


Figure 3. Scatter plot of the first two Principal Components, resulting from a PCA performed on 131 adult Kelp Gulls, using five biometric and two plumage characters. The three populations breeding in the south-western Indian Ocean are individualized (top: subantarctic; middle: southern Africa; bottom: Madagascar).

different *a priori* groups (Table 6). Multivariate Analysis of Variance was highly significant (Wilk's Lambda = 0.027, F = 9.27, df = 63, P < 0.001). Using resubstitution and error count estimates, no individual from Antarctica, South Georgia, subantarctic Indian Ocean and Madagascar was mis-classified. The cross-validation error rate estimate again correctly classified 100% of Antarctic, subantarctic Indian Ocean and Malagasy birds. No mis-classified bird from Patagonia was attributed to the Antarctic group. In conclusion, segregation is well achieved between at least three groups and all other populations, on the basis of biometrics and wing pattern combined. All of these groups include males and females with no highly skewed sex ratio. In this discriminant analysis, the Meinertzhagen specimen was classified with subantarctic Indian Ocean birds; this origin is also supported by its position on Fig. 3 and its observed phenotype (very short bill: 44.2 mm, two white mirrors, three obvious white tongues; see Tables 7 and 8). This bird could be either mis-labelled (Knox 1993), a vagrant from e.g. Marion Island collected on mainland Africa (records of non *vetula* birds are very scarce but have occurred; Brooke *et al.* (1982)), or a bird collected on e.g. Marion Island (a South African possession) and labelled 'South Africa'. It was excluded from calculations in Tables 7 and 8.

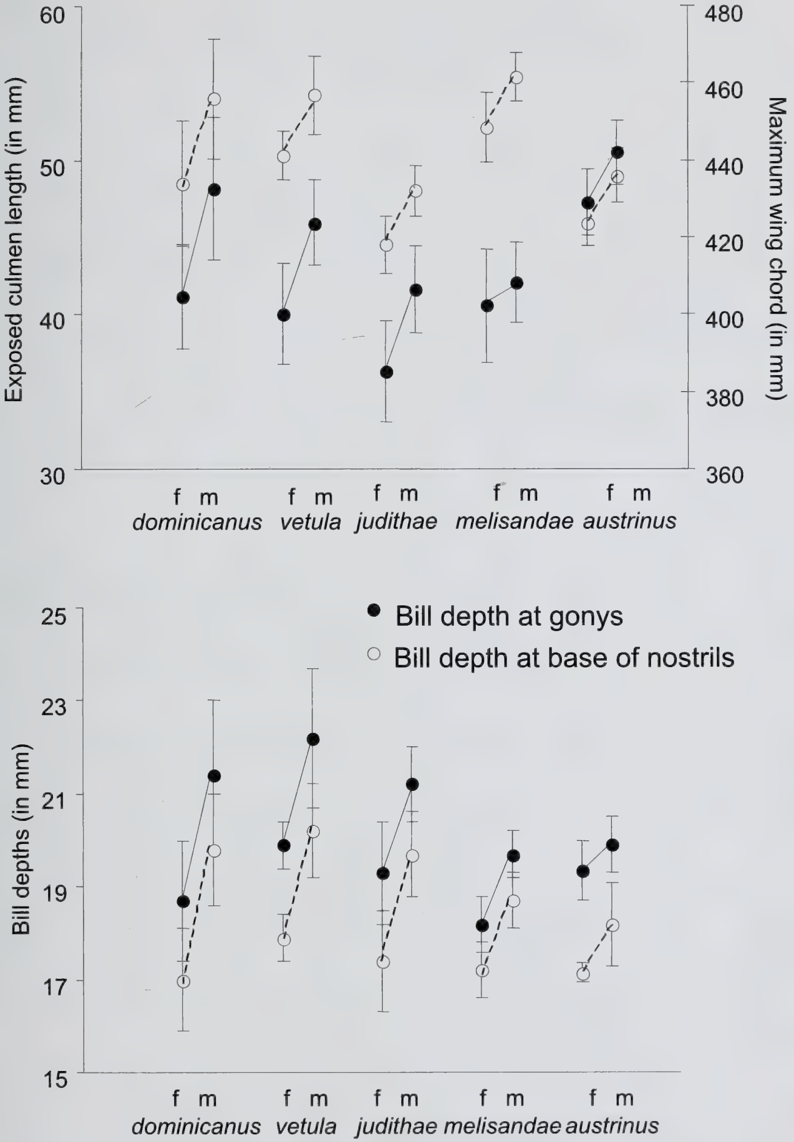


Figure 4. Comparisons of some biometrics (in mm) of females (f) and males (m) of the five different subspecies of Kelp Gull *Larus dominicanus*; a) maximum wing chord (black dots and unbroken lines) and exposed culmen length (white dots and dotted lines); b) bill depths at gonys (black dots and unbroken lines) and at base of nostrils (white dots and dotted lines).

TABLE 7

Measurements (in mm) of *Larus dominicanus* from different subspecies and / or geographical localities and of *L. f. fuscus* and *L. f. intermedius* (for comparison).

Sex	*n1 (n2)*	Maximum wing chord	Tarsus length	Bill exposed culmen length	depth at gonys	depth at nostril
Do - Larus dominicanus dominicanus (Brazil, North Argentina, Paraguay)						
M	7 (5)	432.7 ± 18.5 (417-464)	64.4 ± 4.5 (57.9-72.1)	54.0 ± 3.9 (51.2-61.2)	21.4 ± 1.6 (20.5-23.5)	19.8 ± 1.2 (18.8-21.1)
F	5 (3)	404.7 ± 13.7 (395-425)	60.2 ± 4.0 (54.5-65.6)	48.5 ± 4.1 (45.0-54.7)	18.7 ± 1.3 (17.4-20.0)	17.0 ± 1.1 (16.0-18.1)
Ve - Larus dominicanus vetula (South Africa)						
M	12 (7)	423.7 ± 11.1 (408-440)	66.7 ± 4.4 (57.6-72.0)	54.2 ± 2.5 (48.4-57.3)	22.2 ± 1.5 (19.8-24.7)	20.2 ± 1.0 (18.6-21.4)
F	11 (9)	400.1 ± 13.0 (373-417)	61.2 ± 2.3 (56.6-64.1)	50.3 ± 1.6 (47.5-52.7)	19.9 ± 0.5 (19.0-21.0)	17.9 ± 0.5 (17.1-19.0)
Ju - Larus dominicanus judithae ssp. nov. (subantarctic Indian Ocean)						
M	24 (14)	406.5 ± 11.2 (382-428)	61.8 ± 3.2 (55.8-68.9)	48.0 ± 1.6 (44.4-50.5)	21.2 ± 0.8 (19.5-22.4)	19.7 ± 0.9 (18.2-21.3)
F	9 (9)	385.2 ± 13.1 (362-410)	58.3 ± 1.6 (55.7-60.4)	44.5 ± 1.9 (41.8-47.9)	19.3 ± 1.1 (18.0-22.0)	17.4 ± 1.1 (15.7-19.4)
Me - Larus dominicanus melisandae ssp. nov. (Madagascar)						
M	5 (3)	408.3 ± 10.4 (400-420)	59.3 ± 1.2 (58.0-60.0)	55.4 ± 1.6 (53.8-57.0)	19.7 ± 0.5 (19.2-20.2)	18.7 ± 0.6 (18.0-20.2)
F	7 (5)	402.2 ± 14.6 (380-418)	60.5 ± 1.8 (58.3-63.2)	52.1 ± 2.3 (49.6-54.6)	18.2 ± 0.6 (17.4-18.8)	17.2 ± 0.6 (16.8-18.3)
Au - Larus dominicanus austrinus (Antarctica and Antarctic Islands)						
M	13 (5)	442.0 ± 8.3 (421-457)	62.0 ± 2.4 (58.1-65.2)	49.0 ± 1.8 (46.0-51.9)	19.9 ± 0.6 (19.3-20.7)	18.2 ± 0.9 (17.1-19.3)
F	7 (2)	429.1 ± 8.6 (414-442)	59.8 ± 3.6 (55.1-65.2)	45.9 ± 1.5 (43.7-47.4)	18.9 - 19.8	17.0 - 17.3
Nz - Larus dominicanus (New Zealand)						
M	9 (6)	418.1 ± 11.7 (396-432)	62.9 ± 2.7 (58.4-67.2)	50.2 ± 2.4 (45.4-53.2)	20.8 ± 1.5 (18.5-22.6)	18.6 ± 1.0 (17.1-20.2)
F	11 (6)	405.8 ± 14.6 (391-436)	61.0 ± 2.7 (57.0-66.3)	47.4 ± 3.2 (42.1-51.5)	19.9 ± 1.0 (18.6-21.9)	17.2 ± 0.7 (16.6-18.7)
SA - Larus dominicanus (North and Central Chile, Peru, i.e. western South America)						
M	14 (9)	417.2 ± 15.4 (390-444)	64.9 ± 4.3 (56.7-73.8)	53.0 ± 3.3 (46.4-59.0)	20.5 ± 1.3 (18.2-21.9)	18.8 ± 1.4 (17.0-20.8)
F	19 (9)	400.2 ± 11.5 (379-422)	62.3 ± 3.1 (58.0-66.8)	49.9 ± 3.2 (46.0-58.9)	19.9 ± 0.8 (18.9-21.3)	17.9 ± 1.0 (16.8-19.8)
Pa - Larus dominicanus (Patagonia)						
M	8 (4)	438.7 ± 10.5 (425-455)	63.4 ± 2.2 (60.0-67.4)	51.0 ± 1.9 (49.0-54.3)	22.4 ± 1.5 (20.9-24.4)	20.6 ± 1.2 (19.8-22.4)
F	9 (6)	412.2 ± 13.6 (398-440)	58.7 ± 3.1 (54.5-63.6)	47.6 ± 1.4 (46.0-50.8)	19.3 ± 0.8 (17.9-20.2)	17.7 ± 1.1 (16.7-19.4)
Fa - Larus dominicanus (Falkland Islands)						
M	20 (14)	418.6 ± 10.4 (401-432)	63.7 ± 2.4 (59.5-68.0)	49.3 ± 2.3 (45.0-53.4)	21.3 ± 1.1 (19.8-23.9)	19.7 ± 1.0 (17.9-21.2)
F	11 (8)	401.2 ± 9.2 (385-416)	60.3 ± 3.3 (55.1-64.5)	44.7 ± 2.5 (40.8-49.4)	19.2 ± 0.8 (18.1-20.3)	17.6 ± 0.9 (16.4-19.1)
SG - Larus dominicanus (South Georgia)						
M	4 (2)	418.7 ± 5.1 (413-423)	61.0 ± 1.9 (58.1-62.2)	43.7 ± 2.0 (41.0-45.4)	19.7 - 21.6	17.6 - 19.1
F	4 (2)	401.7 ± 8.4 (394-410)	59.0 ± 4.2 (54.6-64.6)	42.0 ± 1.6 (40.1-43.5)	18.6 - 19.0	16.7 - 17.0
L. fuscus fuscus (collected in Middle East and East Africa)						
M	9	435.6 ± 7.1 (426-446)	59.5 ± 2.6 (55.2-62.3)	50.5 ± 1.6 (48.1-52.7)	16.4 ± 0.9 (15.5-18.5)	15.9 ± 0.8 (15.2-17.2)
F	5	410.6 ± 10.9 (394-422)	59.1 ± 1.7 (56.8-61.0)	46.1 ± 2.1 (44.4-49.7)	15.5 ± 1.2 (14.2-17.4)	14.7 ± 1.0 (13.9-16.1)
L. fuscus intermedius (collected in North Europe and North Africa)						
M	6	416.8 ± 14.6 (403-437)	61.0 ± 1.1 (59.3-62.4)	50.9 ± 2.0 (47.7-53.0)	15.8 ± 0.6 (15.0-16.6)	15.1 ± 0.8 (14.3-16.0)
F	6	396.2 ± 6.3 (389-404)	56.6 ± 1.8 (53.9-58.8)	46.1 ± 2.7 (42.4-50.0)	14.7 ± 0.5 (14.1-15.5)	14.2 ± 0.6 (13.6-15.1)

NOTES. Measurements are mean ± standard deviation (range), M = male, F = female. Area and place names in parentheses indicate where specimen were collected. n1: sample size including adult and all immature birds for which I present wing, tarsus and exposed culmen measurements. n2: sample size of adult and immature birds at least three years old for which I present also bill depth measurements.

TABLE 8

Mirror and tongue scores of *Larus dominicanus* from different localities and of *L. f. fuscus* and *L. f. intermedius* (for comparison). Means ± s.d. (ranges).

Taxon and / or locality	N	Mirror score	Tongue score
Larus dominicanus dominicanus	8	1	1.8 ± 0.3 (1.5-2)
L. dominicanus vetula	15	1.0 ± 0.1 (1-1.5)	1.9 ± 0.5 (1,5-3)
L. dominicanus austrinus	7	1	2.9 ± 0.4 (2-3.5)
L. dominicanus judithae ssp. nov.	23	2	2.4 ± 0.5 (2-3)
L. dominicanus melisandae ssp. nov.	8	1	1.2 ± 0.3 (1-1.5)
L. dominicanus - western South America	18	1	1.9 ± 0.4 (1-3)
L. dominicanus - Patagonia	11	1.1 ± 0.2 (1-1.5)	2.5 ± 0.5 (2-3)
L. dominicanus - Falklands	22	1.1 ± 0.2 (1-1.5)	2.7 ± 0.4 (2-3)
L. dominicanus - South Georgia	3	1	2.7 ± 0.6 (2-3)
L. dominicanus - New Zealand	17	1.2 ± 0.4 (1-2)	2.2 ± 0.6 (1-3)
L. fuscus fuscus	14	1.1 ± 0.3 (1-2)	0.8 ± 0.5 (0-1.5)
L. fuscus intermedius	12	1.0 ± 0.1 (1-1.5)	0.7 ± 0.4 (0-1.5)

Discussion

Age-related and clinal variations in biometrics

Kinsky's (1963) hypothesis that, apart from tarsi and toes, Kelp Gulls continue to grow during their first three years of life was not supported by my statistical analysis of males from subantarctic islands. Here, wing length, tarsus and culmen length attained full size within the first year, and only bill depth continued to increase up to the third year. However, the generality of this conclusion requires confirmation through statistical analysis of adequate samples from females from the subantarctic islands and from both sexes of other populations. Table 7 presents biometric data for males and females of different geographical origins, with wing, tarsus and culmen measurements considering all birds from fully-grown juveniles to adults, while bill depth measurements concern only birds at least three years old.

In terms of geographical variation, Saunders (1896) claimed that within Kerguelen, Kelp Gulls exhibited a range of variation in size that equalled variation throughout the rest of the species' range. Kinsky (1963), however, thought that within New Zealand Kelp Gulls did vary in size geographically, but this conclusion was not supported statistically. Here, I demonstrated clinal variation in the bill and tarsus, but not wing length, over the species' latitudinal range in South America, the only regions for which adequate samples of specimens were available. Within South America and its southern islands, however, statistically significant non-clinal variation in wing length was discovered. Birds from the Falklands and South Georgia, which are resident (Murphy 1936, Prince & Payne 1979), had the shortest wings, while birds of continental origin from Patagonia and the eastern coast had significantly longer wings. This difference might be related to differing migration tendencies if continental birds prove to move longer distances than the island forms.

Distinctiveness of Kelp Gull populations

This study revealed that biometrics of *vetula* are similar to that of nominate *dominicanus* (contra Brooke & Cooper 1979), while both are obviously larger than birds from the southern Indian Ocean (Brooke & Cooper 1979). As dark iris colour in breeding adults occurs in many parts of the species' range (Jiguet *et al.* 2001), *vetula* is probably best identified in the field by its bare parts colours (especially orange – not red – orbital ring turning to pale yellow in winter), though *vetula* is in fact largely discriminated by skull morphology, as pointed out by Chu (1998). Antarctic birds differed clearly from other populations in having short and slim bills and long wings. Birds from subantarctic Indian Ocean islands and from Madagascar are distinct from all other populations of Kelp Gull. The characteristic wing patterns of these two populations are: white mirrors on P9 and P10 for subantarctic Indian Ocean birds, and very restricted white mirror on P10 and white tongues on P5 (P4) of Malagasy birds. The only other population where mirrors commonly occur on the outer two longest primaries is that from New Zealand (*c.* 35% of birds with two mirrors; Higgins & Davies 1996, Jiguet *et al.* 2001). The population from subantarctic Indian Ocean islands is the only one that always shows two obvious white mirrors in full adult plumage whatever the sex or age. Additionally, birds from Kerguelen and Crozet were the smallest of all populations, and birds from Madagascar showed the longest culmen. Birds from South Georgia also showed a surprisingly short culmen (Table 7), and might constitute a distinct taxon, but sample size analysed for this population is very small and further work is needed. Fleming (1924) suggested that birds from the Falklands were probably different from those on the South American continent, but this study failed to find statistically significant differences in the characteristics examined.

Isolation of Kelp Gull populations

The limited evidence from studies of ringed birds supports the idea that most populations of Kelp Gulls, separable on morphological characteristics, are indeed isolated from each other. Antarctic birds are migratory and most leave their breeding sites during winter (Murphy 1936, Parmelee 1992), some reaching Patagonia (ringing recoveries cited in Higgins & Davies 1996). There is no evidence of movement away from breeding islands in the subantarctic Indian Ocean (Weimerskirch *et al.* 1985) or at South Georgia (Prince & Payne 1979). In New Zealand and Tasmania, the maximum distance covered by birds banded as nestlings was 450 km (Higgins & Davies 1996). In South Africa, the maximum dispersal distance of juveniles is 880 km within Africa (Steele & Hockey 1990). Except on the South American mainland, where nothing is known about dispersal, the different Kelp Gull populations are well isolated from each other geographically, with discontinuous breeding ranges in sometimes very different habitats (e.g. Malagasy birds breed on shores of desert lakes, and the geographically-close southern Indian Ocean birds breed on isolated islands subject to a subantarctic climate). Only Antarctic and/or subantarctic birds seem to straggle anecdotally to southern Africa, with only a few observations in tens of years (Brooke *et al.* 1982, Crawford 1997). According to the dispersal pattern of the species and the isolated breeding ranges of most populations, gene flow between populations is most probably very restricted, and selection pressures encountered by them are likely to be different. Even if some Antarctic birds reach Patagonia in winter, the studied specimens from both areas discriminated well in the present analysis, with none being mis-classified with the other group. In this context, recognising the three groups that totally discriminated in this study (on the basis of biometrics and plumage pattern) as distinct subspecies has to be valid, even if data on vocalizations or DNA sequences are not available at the moment.

Studies on biometrics and plumage pattern using discriminant approaches have already proved to be pertinent in segregating birds belonging to different subspecies (see e.g. Bretagnolle *et al*. (2000) for the study of *Puffinus lherminieri bailloni* and *P. l. nicolae*, with a discrimination rate of 86%, a lower value than that observed in this Kelp Gull study).

Proposed taxonomy of Kelp Gulls

On the basis of the statistical analyses above, three populations of Kelp Gulls are totally separable from nominate *dominicanus* and South African *vetula* on the basis of their biometrics and plumage. These populations are those breeding in 1) the subantarctic Indian Ocean, 2) Madagascar, and 3) Antarctica. I propose that these should be recognized as distinct subspecies, fully accepting that further study, especially of DNA, might further modify our understanding of the taxonomy of the Kelp Gull. For the first two of these populations new names are needed, while for the third population a name already exists. I propose the following systematic treatment of these populations.

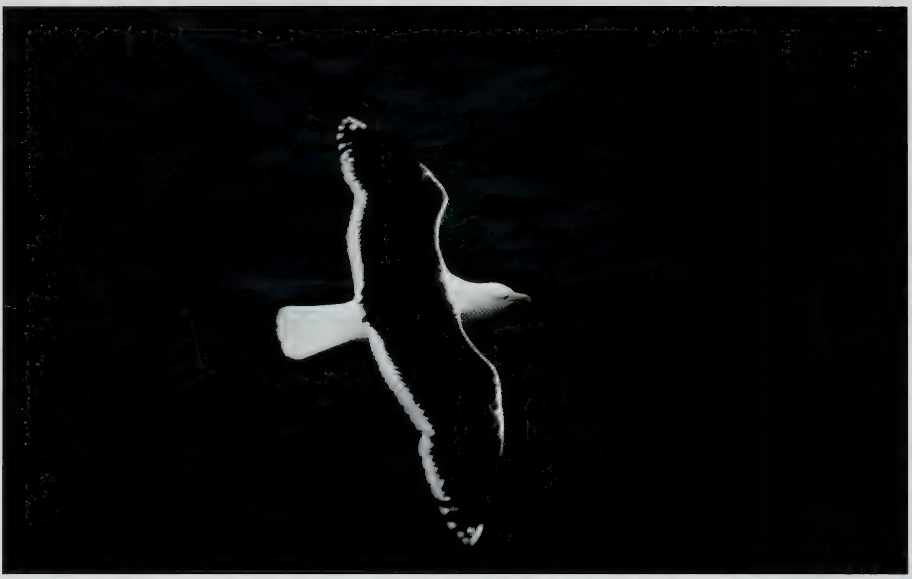
For the populations that breed in the subantarctic Indian Ocean, I propose the name

Larus dominicanus judithae, subsp. nov. Kerguelen Kelp Gull

Holotype. Muséum national d'Histoire naturelle in Paris, n° 1974-1955, adult female collected on Kerguelen Islands at Anse du Pacha on 22 February 1971 (coll. Derenne - Lufbery).

Diagnosis. Similar to *L. d. dominicanus* and *L. d. vetula*, but the smallest of all Kelp Gulls, with short and deep bill, vermilion red orbital ring and always pale ivory or pale yellow iris during the breeding season; no breeding birds with a dark iris have been reported. The main differences from other subspecies are always white mirrors on the outer two primaries, and obvious white tongues on at least two or three median primaries. Juveniles are particularly dark, with uniform sooty-brown plumage (Fig. 5). Extensive dark on the head and body can be retained until three years old. Measurements of males and females from this subspecies are given in Table 7, mirror and tongue scores in Table 8.

Description of holotype. Saddle and upperwing uniform slate black (though with a brown cast due to wear); head and body pure white. Very large mirror on P10 (5 cm



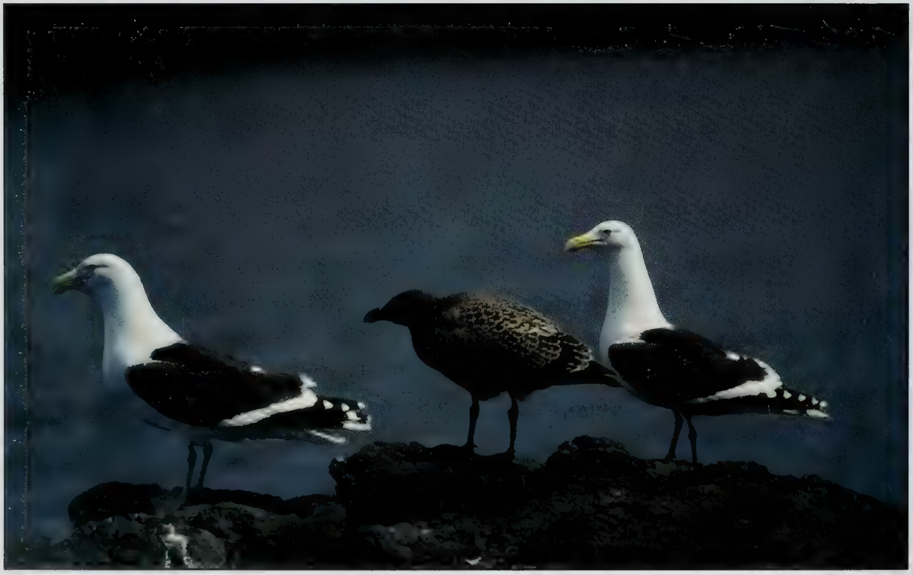


Fig. 5. Above: flying adult showing the typical wing pattern of *Larus dominicanus judithae*, with white mirrors on P10 and P9 and obvious white tongues on median primaries; below: adult pair and offspring of *Larus dominicanus judithae*, showing general structure (short and deep bills) and extensive white on wing tips of adults, and the dark plumage of the juvenile. Photographs by F. Jiguet.

long) merging into the white tip of the feather, with some black on each side of the tip. Small mirror on P9 restricted to the inner web, which it crosses completely. Large white tips to primaries, secondaries and tertials. Obvious white tongues on P5, P6 and P7 (though less prominent outwards). No black on P4. P9 is 4 mm longer than P10, and four primary tips visible beyond the tertials. Measurements (mm) of holotype are: wing 392; tarsus 60.4; culmen 47.0; bill depth at gonys 18.6; bill depth at nostrils 16.3.

Paratypes. Muséum national d'Histoire naturelle in Paris, n° 1974-1950, adult male collected on Kerguelen Islands on 22 February 1971 (coll. Derenne – Lufbery); n° 1974-1957, adult female collected on Kerguelen Islands at Pointe Denis on 23 January 1971 (coll. Lufbery); n° 1951-663, adult male collected on Kerguelen at Baie des Français on 27 January 1951 (coll. Ph. Milon).

Paratypic variation. Differences from the holotype are white tongues on P6-7 only and then P5 with black outer and white inner web; or white tongues on P6-7-8. Large white mirror on P10 either separated from white tip by a black bar, or continuous with white tip with small amount of black, or complete merging with no black at all. Very rarely, a very small whitish mirror is present on P8.

Distribution of taxon. Breeds in southern Indian Ocean on subantarctic islands (5,000-10,000 pairs): Kerguelen (4,000-8,000 pairs), Crozet (700-1,400 pairs), and also very probably Heard (100+ pairs), Marion (200 pairs) and Prince Edward (30 pairs) Islands, though specimens from these three islands were not examined during this study (population sizes after Higgins & Davies 1996). Measurements given by Brooke & Cooper (1979) for Kelp Gulls on Marion Island are similar to those obtained on Kerguelen and Crozet Islands, while birds there all display white mirrors on outermost two longest primaries (Jiguet *et al.* 2001).

Etymology. *Judithae* is derived from the feminine first name Judith. This subspecies was named in honour of Judith who supported my one-year long works on seabirds at Kerguelen Islands.

For the population that breeds in Madagascar, I propose the name

Larus dominicanus melisandae, subsp. nov. Malagasy Kelp Gull

Holotype. Muséum national d'Histoire naturelle in Paris, n° 1974-76, adult female collected on Madagascar at Nosy Manitra on 19 July 1948 (coll. Ph. Milon).

Diagnosis. Smaller than *vetula*, and with smaller white tongues on median primaries, but with similarly long but thinner bill. Differs from nominate *dominicanus* in long bill, and one or rarely two very restricted white tongues on median primaries (none on P6-7), in the fashion of *L. fuscus intermedius* or *L. f. fuscus*, thus close - and at closest within Kelp populations - to *L. fuscus*. White mirror only on longest primary and very small (*c.* 1 cm^2). Different authors described the iris as pale yellow and the orbital ring as red (Langrand 1990, Morris & Hawkins 1998, Sinclair & Langrand 1998, Jiguet *et al.* 2001). Measurements of males and females from this subspecies are given in Table 7, mirror and tongue scores in Table 8.

Description of holotype. Saddle and upperwing uniform slate black, sometimes suffused grey (new feathers); head and body pure white. Very small white mirror on the outermost primary (P10), restricted to the inner web and 1cm long. P9 to P6 blackish. Small white tips to primaries, large white tips to secondaries and tertials. One white tongue on P5, while P4 shows some black on outer web. White marginal coverts on upperwing producing obvious white leading edge to the wing. No indication of bare part colours on label. P10 slightly longer than P9, so that five primary tips are visible beyond the tertials. Measurements (mm) of holotype are: wing 418; tarsus 60.7; culmen 54.6; bill depth at gonys 18.8; bill depth at nostrils 17.3.

Paratypes. Muséum national d'Histoire naturelle in Paris, n° 1932-161, adult male collected on Madagascar south of Tulear on 27 February 1930 (coll. Delacour); n° 1932-162, adult female collected on Madagascar at Androka on 7 March 1930 (coll. Delacour); the latter had yellow iris and red eye ring when collected (from label).

Paratypic variation. Differences from the holotype are: white tongue also present on P4, but black separating white tongue and tip interrupted on inner web. White mirror on P10 slightly extending onto outer web, but on a few mms only. Fine grey streaks on head and neck in March, at the beginning of the post breeding complete moult.

Distribution of taxon. Along coasts of south-west and south Madagascar, from Toliara to Tôlanäro. The species is common on Lake Tsimanampetsotsa (Langrand 1990, Morris & Hawkins 1998). Since Brooke & Cooper (1979), breeding between October and January on Madagascar has been reported by Langrand (1990). Population size unknown.

Etymology. Melisandae is derived from the feminine first name Mélisande, itself derived from the greek *melanos*, which means black, and fits well the dark wing pattern of Malagasy Kelp Gulls, which is the blackest in the species.

For the populations that breed in Antarctica, I propose to resurrect the name *austrinus* Fleming. The name *austrinus* was already attributed to birds from the South Shetlands in Antarctica (Appendix). As there is no evidence that birds from the Antarctic Peninsula differ from those breeding on the South Shetland Islands, a conservative approach is to group all of these under the name *L. d. austrinus*, Antarctic Kelp Gull. The holotype is the one referred to by Fleming (1924): n° 28492 of the personal collection of J.H. Fleming, adult male collected on 13 March 1922 on Deception Island, South Shetlands. This type is now preserved at the Royal Ontario Museum, Toronto (registration n° 39471). The description of *austrinus* by Fleming does not relate differences between nominate and Antarctic birds, but the description of the type specimen provided by Dr Brad Millen fits the Antarctic birds I examined in Paris.

Further studies involving measurements, wing pattern and also bare parts colouration should provide more information about the taxonomic status of some

Kelp Gull populations. For example, there is no doubt that, in a study considering iris and orbital ring colours, *vetula* would highly discriminate from *dominicanus*, *judithae*, *melisandae* and *austrinus*. Larger sample sizes for birds from South America, the Falklands and especially South Georgia should allow sex-specific analyses of biometrics and wing pattern, which could reveal further unrecognised taxa. In addition, DNA sequencing is needed to help with further clarifying the taxonomy and eventual specific status of over-looked or recognised subspecies.

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Appendix

Nomenclatural review

In the early literature, the Kelp Gull was listed erroneously under specific names of black-backed gull species from the Northern Hemisphere, i.e. *L. marinus* and *L. fuscus* (reviews in Peters 1934). The following names that have been applied to the Kelp Gull *L. dominicanus* are compiled from Saunders (1896), Dwight (1925), Peters (1934), Murphy (1936), Fleming (1924), Hellmayr & Conover (1948), and from original descriptions cited and personal observations at the BMNH and the MNHN. I also contacted all museums that could potentially hold type specimens described under all names I came across. Museums contacted were: MNHN, BMNH, Natural History Museums in New York (AMNH), Washington, Toronto (Royal Ontario Museum, Canada), Wellington (Dominion Museum, New Zealand), Wiesbaden, Mainz, Frankfurt and Berlin (Germany). There is no type specimen of *L. dominicanus* in the BMNH collection (*fide* Mr M. Walters).

Larus ***dominicanus*** Lichtenstein, 1823, was described from coasts of Brazil. The original description is in a catalogue of duplicate specimens for sale by Lichtenstein (then director of the museum in Berlin). The type is still in the collection at the Museum für Naturkunde in Berlin (catalogue n° ZMB 13566).

The type of *Dominicanus* ***vetula*** Bruch, 1853, comes from South Africa. It is an unsexed adult preserved at the MNHN in Paris (registration n° 14469), collected in 1820 by M. Delalande at Cape of Good Hope. Measurements (mm) of the type are: wing 417; tarsus 62.5; culmen 47.5; bill depth at gonys 21.0; bill depth at base of nostrils 19.0. The name *Gabianus* ***vetulus*** is also found on the label of an African specimen preserved at the MNHN, with no description associated.

The type of *Larus dominicanus* ***austrinus*** Fleming, 1924, collected on the South Shetland Islands, was part of J.H. Fleming's private collection, and is now in the collection of the Royal Ontario Museum (catalogue n° 39471). The type specimen (a male) has been examined on my behalf by Dr Brad Millen. Measurements (mm) of the type are: wing 415; tarsus 62.8; culmen 48.8; both wings show one white mirror and three white tongues. Fleming described this subspecies on the basis of slightly paler slate black upperparts. The subspecific status of *austrinus* was later invalidated by Dwight (1925) and Murphy (1936) who examined very large series from many localities. Dwight (1925) noticed only a slight difference between *austrinus* birds and other *dominicanus*, insufficient for subspecific recognition, arguing that specimens in fresh plumage are greyer in tone and that *austrinus* birds were indistinguishable from those in a series taken in South America and New Zealand.

According to Hellmayr & Conover (1948), *Larus verreauxi* Bonaparte, 1854 is a *nomen nudum*. Bruch and Bonaparte simultaneously published descriptions of *verreauxi* in 1855. Both described specimens from Chile, though while Bruch reported that he consulted *Dominicanus verreauxi* at the MNHN, Bonaparte omitted to cite the location of type(s) (Hellmayr & Conover 1948). Bruch also cited Bonaparte's paper (with the pre-publication or erroneous date 1854) in his text, so that *verreauxi* should be attributed to Bonaparte, 1855 (1854) (cf. Art. 21.8 of ICZN 1999). The name is also found with different spellings in subsequent publications: *verreauxii, verrauxii,* and *verrauxi*, which are therefore *lapsi calami* (Art. 32.5.1 of ICZN 1999). The only Chilean specimens still preserved at the MNHN arrived there in 1872, and no previous bird from Chile was registered in the exit catalogue from 1844 to the present. The type or type series of *verreauxi* has thus been lost.

Dominicanus ***vociferus*** Bruch, 1853, was described from South America, with no more precise location. Bruch added 'Anglorum' after '*vociferus*', signaling this name was used in England. Bruch (1853) inferred that no labelled type specimens of *vociferus* ever existed in England, an absence confirmed by Mr M. Walters, BMNH. Rather than seeing English skins, Bruch appears to have based his remarks on the literature or correspondence using what he understood to be the current English terminology. Bruch (1855) stated later that he based his description of *D. vociferus* on specimen(s) preserved at the Mainz museum (where he worked), and thus the type or type series had to be there. However, the whole Mainz collection was destroyed during the second world war.

Dominicanus ***pelagicus*** Bruch, 1853, was described from birds collected in 'Indien und Oceanien', also with the term 'Anglorum' added to the name. As for *vociferus*, Bruch did not see English skins, and no type ever existed in England. Bruch (1855) specified he consulted specimen(s) of *pelagicus* in Mainz, but the whole collection there was lost. There is no record of Kelp Gull in India (Grimmett *et al.* 1998), and Australia was colonised only in the 1940s (Higgins & Davies 1996). As there is no type specimen to verify its true taxonomic status, I consider *pelagicus* a *nomen dubium*.

Larus ***antipodus*** Gray, 1844, is reported from New Zealand. However, Gray (1844) just cited specimens in his catalogue as '*Larus antipodus?*', and no description was associated to this name. At this stage, *antipodus* is a *nomen nudum*. Bruch (1853) gave a short description of *Dominicanus antipodus* based on specimens preserved in Mainz, thus *antipodus* should be attributed to this author (*Dominicanus antipodus* Bruch, 1853) – *D. antipodum*, Bruch, 1855, is the same name, differently accorded. As the collections in Mainz have been lost, there is actually no type for *antipodus*.

Larus ***azarae*** Bonaparte, 1857, was described from Brazil and Patagonia (see also Lesson 1831). The description by Lesson of "La Grande Mouette d'Azara" (no Latin name) from Brazil states that the taxon has yellow bill, white body and brown wings and tail. Lesson (1831) probably omitted to signal that he was first describing an adult bird, then an immature bird in the last part of his text. Bonaparte (1857) first used the name *azarae* for this taxon, and it should be attributed to him. Bonaparte based his description on specimens from Brazil and Patagonia consulted at museums in Frankfurt and Paris ("Mus. Francof. Paris"), so the type series of *azarae* should be in the collections of these museums. The MNHN holds two specimens from Brazil (one juvenile and one adult), collected in July 1820 by M. Auguste de Saint Hilaire (registration n° 2001-77 and 2001-78), and one first-winter specimen from Patagonia donated in February 1831 by M. d'Orbigny. Although four specimens from Patagonia were donated by M. d'Orbigny, according to the MNHN donation catalogue, only one is still present in the collection in 2001 (registration n° 2001-80). All these birds were present at the MNHN when Bonaparte described *azarae*. The Museum at Frankfurt holds one specimen from Brazil, donated in 1822 by Freireiss (registration n° SMF 15068). According to Art. 72.4.1.1 (and associated example) of ICZN (1999), all the specimens cited by Bonaparte constitute the type series, in which can be designated lectotypes (ICZN 1999, Art. 74).

The type of *Dominicanus* ***fritzei*** Bruch, 1855, collected at Straits of Sunda, Java, by Dr. Fritze (under the name *Larus fuscus*), was deposited in the Wiesbaden Museum, and is still there (registration n° 2233). Bruch (1855) accepted the specific status of this bird on the basis of its large size, as large as *L. marinus*. However, the locality of collection seems unreliable for Kelp Gull, but also for any other large black-backed gull species. Dr. Fritz Geller-Grimm provided me with photographs and measurements (mm) of the type: wing length 445; bill length 59; bill depth at gonys 28; bill depth at base of nostrils 24; tarsus 70. This specimen has yellow legs and only one white mirror, on the outermost primary (P10). The huge bill depths alone indicate that this bird is not a Kelp Gull, and must be regarded as unidentified.

Larus ***flavipes*** Temminck, 1840, was described from the Cape of Good Hope, South Africa. It thus potentially antedates *vetula*, Bruch, 1853. However, Wolf & Meyer first described *Larus flavipes* in 1805 from a type specimen belonging to *L. f. fuscus*, according to Dwight (1925) (see also Lesson 1831). Bruch (1853, 1855) already considered *flavipes* a junior synonym of *fuscus*.

Larus ***littoreus*** Forster, 1844, was described from the Cape of Good Hope, South Africa. The name *littoreus* (sometimes written *litoreus*, a *lapsus calami*) therefore potentially antedates *vetula*. Forster was however preoccupied by *L. littoreus*, Forster, 1781, which is indeterminate but should probably be referred to *L. f. heuglini*, Bree, 1876 (Saunders 1896), which name it would antedate (for further details see Brooke & Cooper 1979). Accordingly, *littoreus* should not be considered to refer to *L. dominicanus* (Brooke & Cooper 1979).

The type of *Lestris* ***antarcticus*** Ellman, 1861, was collected in New Zealand. However, *Lestris antarcticus* was already used by Lesson (1831) to describe *Catharacta antarctica*, and reporting this name for a Kelp Gull is a misapplication (ICZN 1999, Art. 49). The true synonymy of *L. antarcticus* is with *C. antarctica*.

The name *Larus* ***capensis*** (Smith) was reported by Saunders (1896) from the label of a specimen from South Africa preserved at the BMNH, but without a description. Accordingly, *capensis* is a *nomen nudum*.

Larus ***melanoleucus*** Boies, 1844 (Isis, p.196), from New Zealand is a *nomen nudum* (see Matthews & Iredale 1913).

In addition to these names, a specimen from Nightingale Island, Tristan da Cunha, labelled *Larus* ***dominicensis*** (BMNH, registration n° 1922-12-6-41), has no published reference, and should be considered a *nomen nudum*.

Larus ***pacificus*** Layard, 1863, was given to Kelp Gulls observed in New Zealand, but the author confused the Latin name of the Pacific Gull, already known as *Gabianus pacificus* (Lath.) by Bruch (1853).

It appears pertinent to designate a lectotype for *azarae*, and neotypes for *antipodus* and *verreauxi*, in order to help to clarify their true taxonomic status (ICZN 1999, Art. 75.3.1). Concerning *vociferus* (locality of collection given as a general 'South America'), I decided not to designate a neotype, especially because of the poorly defined locality of collection and therefore non evident interest of maintaining a particular taxonomic status.

Lectotype of *Larus azarae* Bonaparte, 1857: Muséum national d'Histoire naturelle in Paris, adult from Brazil donated by M. A. de Saint Hilaire and received in July 1820 (n° 795 of his catalogue), current registration n° 2001-78. As Bonaparte (1857) first cited Brazil as the type locality, this being the sole locality also cited by Lesson (1831), and as the largest part of the type series is at the MNHN, I designate the adult specimen from the MNHN as the lectotype of *azarae*.

Neotype of *Larus verreauxi* Bonaparte, 1855 (1854): Muséum national d'Histoire naturelle in Paris, n° 2001-79, adult male collected in Chile, donated to the MNHN in 1872 by Boucard (Coll. Reed).

Neotype of *Dominicanus antipodus* Bruch, 1853: Muséum national d'Histoire naturelle in Paris, n°1846-1233, adult collected in New Zealand, donated by M. Arnoux in 1846. The neotype was chosen from those specimens from New Zealand already present in the MNHN collections in 1846, thus certainly seen by Bruch during his visits to Paris.

Junior synonyms of *dominicanus*

Birds from Patagonia, western South America, the Falkland Islands and South Georgia are best still regarded as belonging to nominate subspecies, though further work is needed to clarify their true taxonomic status. On current knowledge, and as long as there is no evidence of differences between birds from the east and west coasts of South America and from New Zealand, all names *azarae, verreauxi, vociferus* and *antipodus* should be considered junior synonyms of *dominicanus*.

Notes on the generic citation of the Oilbird *Steatornis caripensis* (Steatornithidae)

by Nigel Cleere

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The Oilbird *Steatornis caripensis* is a monotypic, neotropical species that was described by Alexander von Humboldt, who gave it a generic name in 1814 (von Humboldt 1814) and a specific name three years later (von Humboldt 1817a). The citation for the generic name *Steatornis* has long been given as 'Humboldt 1814, Voy. Intér. Am. 1, p. 416' (cf. Peters 1940), but this appears to be inaccurate and requires comment and correction.

Between 1799 and 1804, von Humboldt and the French botanist Aimé Bonpland travelled widely in South America and published the results of their travels in an immense work entitled '*Voyage aux régions équinoxiales du Nouveau Continent, fait en 1799, 1800, 1801, 1802, 1803 et 1804*'. This was accomplished through a series of livraisons and livres that were issued between 1805 and 1835, bound in 30 volumes to form six parts: Relation Historique, Zoologie, Essai Politique, Astronomie, Physique Générale and Botanie (Sherborn 1899, Löwenberg 1960).

The first description of the bird and its habits given by von Humboldt, appeared in part one, volume one of von Humboldt and Bonpland's work (von Humboldt 1814). The full title of this volume reads '*Voyage aux régions équinoxiales du Nouveau Continent, fait en 1799, 1800, 1801, 1802, 1803 et 1804, par Al. de Humboldt et A. Bonpland; rédigé par Alexandre de Humboldt. Avec deux atlas, qui renferment, l'un les vues des cordillères et les monumens des peuples indigènes de l'Amérique, et l'autre des cartes géographiques et physiques. Tome premier*', and is dated 1814. A second title page, reads 'Voyage de Humboldt et Bonpland. Première partie. Relation Historique. Tome premier'. The Oilbird is discussed in Livre 3, Chapter 7, entitled 'Convent de Caripe. Cavern du Guacharo. Oiseaux nocturnes', and the chapter covered pages 409 – 431. von Humboldt began his account of the Oilbird on page 416, and gave the generic name *Steatornis* in a reference to a monograph of the species that was to appear in a later volume. He continued, however, to refer to the species by its local name of Guacharo (a Castilian word meaning 'one who cries and laments'). He also stated that 'it forms a new genus that differs from *Caprimulgus* by the loudness of its calls, its strong beak with a double tooth and its feet that lack the membranes uniting the anterior phalanges of the claws'. The first of three footnotes to this page also listed features of the beak, rictal bristles, feet and claws as generic characters.

The nomenclature of this species then remained in limbo for three years, with only a generic name in place, but was eventually given the specific name *caripensis* by von Humboldt in a separate publication (von Humboldt 1817a). A monograph of the Oilbird then appeared in part two, volume two of the 'Voyage aux régions équinoxiales du Nouveau Continent' (von Humboldt 1817b). The title page of this volume reads '*Recueil d'observations de zoologie et d'anatomie comparée, faites dans l'océan atlantique, dans l'intérieur du nouveau continent et dans la mer du sud pendant les années 1799, 1800, 1801, 1802 et 1803; par Al. de Humboldt et A. Bonpland. Deuxième volume.*' and is dated 1833. The monograph, written by von Humboldt, is entitled 'Mémoire sur le Guacharo de la Caverne de Caripe, nouveau genre d'oiseaux nocturnes de la famille des passereaux', covered pages 139 – 144, and contained a full description of *Steatornis*. According to Sherborn (1899), this volume was issued in livraisons, and the Oilbird monograph formed part of livraison 10, which was actually published in 1817.

Subsequent authors generally quoted von Humboldt (1817b) when citing the genus *Steatornis* (e.g. Lesson 1843, Gray 1844, Bonaparte 1850), until Hartert (1892) strangely cited 'Humboldt 1810, *Bull. Soc. Philom. P*aris (3) 17, p. 295'. However, this work did not contain the generic name *Steatornis*. Sherborn (1922) also quoted von Humboldt (1817b), but listed the citation as 'Voy. Intér. Amér. (Obs. Zool. II. 1817), 141'. Peters (1940) correctly cited von Humboldt (1814), but followed Sherborn's usage of the title 'Voy. Intér. Amér.', and this was followed by modern authors such as Cleere (1998), but not Sibley & Monroe (1990), who cited von Humboldt (1817b). Thomas (1999) incorrectly stated in her introductory text that von Humboldt did not publish his account of his first encounter with the Oilbird until 1817, but then cited von Humboldt (1814) in the species account.

It seems clear that most of the early taxonomists only had access to von Humboldt (1817b), and the title of that work was abbreviated to 'Voy. Intér. Amér.' by Sherborn (1922) without explanation. The correct citation by modern authors, of von Humboldt (1814), can be traced back to Peters (1940), although the incorrect usage of 'Voy. Intér. Amér.' as the title of that work has continued, resulting in a strangely inaccurate citation for the genus *Steatornis*. Having examined copies of all of the literature mentioned above, I suggest that the correct citation for the genus *Steatornis* is as follows:

> *Steatornis* von Humboldt 1814, *In* von Humboldt & Bonpland, *Voy. Nouv. Cont.* Pt. 1, Vol. 1, p. 416.

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The *Hierococcyx fugax*, Hodgson's Hawk Cuckoo, complex

by Ben F. King

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All four forms of the *Hierococcyx fugax* species complex, *H. (f.) hyperythrus* (Gould), *H. (f.) nisicolor* (Blyth), *H. (f.) pectoralis*, Cabanis and Heine, and *H. (f.) fugax* (Horsfield), were originally described as separate species. Peters (1940) lumped them all into a single species, *H. fugax*, and that view has generally been followed ever since, including Sibley & Monroe (1990) and Howard & Moore (1991). Sibley & Monroe (1993) even synonomized *nisicolor* with *fugax*. However, Payne (1997) split *H. pectoralis* from the *H. fugax* species complex on the basis of its song, which differs from the other three forms.

Recent field work and tape recording have shown that the group has three distinct song types: *(1) hyperythus, (2) pectoralis*, and *(3) fugax/nisicolor*, suggesting a strong basis for also splitting *hyperythrus* from *fugax*. Study of specimens shows that the adult plumages of *fugax* and *nisicolor* are quite different, indicating that, despite sharing similar songs, the current treatment as a single species needs to be re-evaluated.

The genus *Hierococcyx* is herein used for the Asian group of *Cuculus* cuckoos known as hawk-cuckoos. The hawk-cuckoos differ markedly in their broader, more rounded wings, which in flight lend the birds a remarkably *Accipiter*-like appearance, which is close enough to regularly lead to misidentification of these cuckoos as hawks. Further, their plumages more closely resemble the patterns of *Accipiter* spp., resemblances that are strong enough to suggest a case for mimicry. Their songs tend to be more shrill than the remaining *Cuculus* cuckoos, which lack the repetition of their songs to a crescendo.

Voice

Hierococcyx hawk-cuckoos have two kinds of vocalizations, song and "long call." The three song types are as follows (Fig. 1):

(1) *H. hyperythrus* utters a *weeweepeeit* or *weeweepeeweit.*
(2) *H. pectoralis* utters a *wee-wee-wee-tee-too* or *wee-wee-wee-tee-tee-too* or *wee-wee-wee-tee-too-too*.
(3) Both *H. nisicolor* and *H. fugax* utter a *fee-weet* or *wee-weet* (or *gee-whiz* of some authors).

All regularly repeat their loud, shrill, whistled songs in a series, each subsequent song sounding a little more frantic, reaching a sort of crescendo, and then taking a short break before beginning again.

The songs of both *fugax* and *nisicolor* on the sonograms appear to vary in frequency. Further tape recordings are needed to ascertain if this is due to taking the individual songs from different parts of the call sequence, or actual individual or population variation.

Although no quantitative analysis of sonograms has been undertaken, these songs appear to be universal for each form. This is based on my experience of song as follows: *hyperythrus* in Heilongjiang Province of northeastern China and Japan; *pectoralis* at several localities in Luzon, Cebu, Negros, and Mindanao in the Philippines; *nisicolor* in Nepal, Bhutan, Yunnan and Vietnam; and *fugax* in Peninsular Malaysia, Sumatra and Borneo.

During the courtship/breeding season, song of these hawk-cuckoos is heard at all times of day or night. The stereotyped nature of the calls over large geographical areas and constant calling suggest strong selective pressure for maintenance of the particular song.

Each of the four forms has a long call. The long call is uttered much less frequently than the song and its function is unknown. Other cuckoos of the genera *Hierococcyx* and *Cuculus* have similar long calls and other cuckoos of the genera *Cacomantis* and *Surniculus* have what appear to be analogous long calls. *H. fugax* forms often appear somewhat agitated when using the long call, but this is not always the case.

The long calls of the four forms are more variable than the song and may or may not show consistent differences. More recordings are needed to assess this. Each of these calls is a loud, shrill whistle, rising in pitch and sounding increasingly frantic, reaching a crescendo, then tailing off.

(1) *H. (f.) hyperythrus* can be syllabicated as follows: *weeteetitditdiditdidit titititititititi.*

(2) *H. (f.) pectoralis*: *weetaweetaweetaweetaweetaweetaweetaweetawee tatootootootootootoo too.*

(3) *H. (f.) nisicolor: witititititititititititititi-ti ti.*

(4) *H. (f.) fugax: wadawadawadawadawadaquedeequedeequedeequedeetotototototo-to-to to.*

Immature (first basic) plumage

The immature (first basic of Humphrey & Parkes 1951) plumages of the four forms are much alike. Head, neck, and chin and sides of throat slaty-grey, tinged brown, with a whitish band separating the grey of chin and sides of throat, often with a partial or complete whitish band around hindneck. Rest of upperparts of body, primaries and secondaries blackish-brown with narrow dark rufous bars, the rufous barring often less conspicuous on the back (the rufous barring is lacking or faint on the back, upper wing coverts and tertiaries of *hyperythrus*). There is often a largely white tertiary. Tail is brownish-grey, often suffused with rufous, with a broad subterminal black band, a narrow rufous tip and two or three visible narrow blackish bands. Throat, breast and belly buffy white, with blackish brown streaks, often with some rusty blotching. Under tail coverts buffy white.

Some specimens are intermediate between immature (first basic) and adult (definitive basic) plumage suggesting a gradual, and possibly protracted transition.

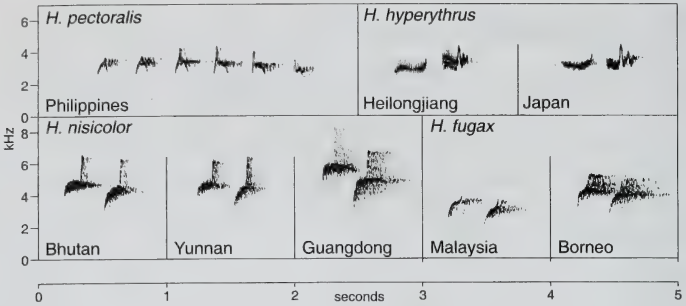

Fig 1. Songs of the four forms of the *Hierococcyx fugax* complex. All are loud shrill whistles. The songs of *nisicolor* and *fugax* are nearly identical while those of *pectoralis* and *hyperythrus* are quite different in structure. The Malaysian *H. fugax* recording was supplied by the Library of Natural Sounds at the Laboratory of Ornithology at Cornell University; Guangdong *H. nisicolor* by M.C. Michener; Japan *H. hyperythrus* from a commercial tape recording by NHK. The remaining recordings were made by Ben King and will eventually be on deposit at the Library of Natural Sounds at Cornell University.

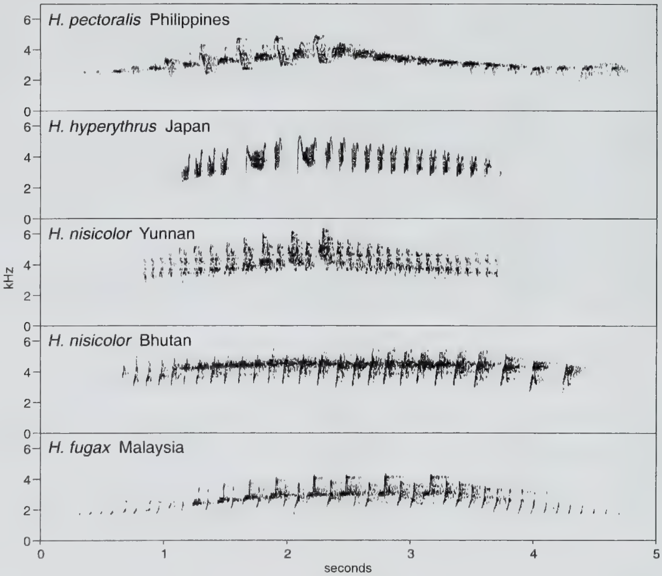

Fig 2. Long calls of the four forms of the *Hierococcyx fugax* complex. All are loud, shrill whistles, rising in pitch and sounding increasingly frantic, reaching a crescendo, then tailing off. This call's function is unknown. The long calls are more variable than the songs and it is not known if there are consistent differences between taxa. The Malaysian *H. fugax* recording was supplied by the Library of Natural Sounds at the Laboratory of Ornithology at Cornell University; Japan *H. hyperythrus* from a commercial tape recording by NHK. The remaining recordings were made by Ben King and will eventually be on deposit at the Library of Natural Sounds at Cornell University.

There were not enough specimens at AMNH to describe the juvenile (juvenal) plumages.

Adult (definitive basic) plumage

Adult (definitive basic) plumages of the four forms have slaty-grey head and upperparts with blackish primaries, usually with one of the shorter tertiaries pale grey to whitish, forming two pale spots. (Some *fugax* have a complete or partial white collar around the base of the hindneck.) The tail is brownish grey with two or three visible narrow blackish bands, a broad subterminal blackish band and a narrow rufous tip.

The chin and sides of the throat are slaty-grey (concolourous with the head), with an intervening white or whitish band, starting from the rear edge of the mandible and running into the pale lower throat. This white whisker mark sets off the grey extending down the sides of the throat and gives the birds a falcon-like (e.g. Peregrine *Falco peregrinus*) head pattern. This is most pronounced in *hyperythrus* but readily noticeable in the other three forms.

In *hyperythrus, pectoralis* and *nisicolor*, the throat is whitish, usually with a rusty or greyish tinge. The breast, upper belly and flanks are rufous, darkest in *pectoralis*, paler in *hyperythrus*. The breast of *nisicolor* has vague grey streaks, and the breast of *pectoralis* has faint grey shaft streaks. The centre of the belly and under-tail coverts are white.

In striking contrast, the underparts of *fugax* are entirely buffy white (except for the grey on the chin and sides of throat), with narrow blackish-brown streaks on the lower throat, breast, upper belly and flanks. Some individuals have some rusty splotches on the upper breast. Thus in *fugax*, the adult plumage is a modified immature plumage rather than the fully different adult plumage of the other three forms.

The wing lining and axillaries of *nisicolor* are buff to rusty buff with some blackish brown markings, while these areas on the other three forms are unmarked (or very sparsely marked) buff to rusty buff (but axillaries rufous, as breast, in *pectoralis*). The pale bands on the underside of the primaries tend to be broader in *fugax* than in the other three forms.

It should be noted that while Chasen (1939) accurately described the plumages of *fugax* and *nisicolor* and their differences, Wells (1999) erroneously described a subadult (intermediate basic) plumage of *fugax* as the adult (definitive basic) plumage.

Morphometrics

The migratory forms *hyperythrus* and *nisicolor* have more pointed wings than the resident *pectoralis* and *fugax* (Table 1). *H. hyperythrus* has distinctly longer wings and tail than the other three, while *nisicolor* has somewhat longer wings than *fugax*. The bill of *fugax* is noticeably longer and more robust than that of any of the other three forms.

Range

The known breeding ranges of the four forms are allopatric.

H. hyperythrus breeds from southern Amurland (Vaurie 1965 and Dementiev *et al.* 1966) in southeastern Siberia south to northeastern China (south to Hebei Province, Cheng 1987), and Honshu in Japan. Winters in Borneo and Philippines (although Kennedy *et al.* 2000, said they have been unable to substantiate its presence in the Philippines), rarely to Sulawesi and Buru in Indonesia. Migrant Eastern China.

H. pectoralis is resident in the Philippines.

H. nisicolor breeds in the lower Himalayas from Nepal east to southern China (Sichuan and southern Jiangsu Provinces south). Himalayan birds are apparently altitudinal migrants, wintering at lower altitudes nearby (but possibly migrating elsewhere, Ali & Ripley 1981), while Chinese breeders apparently all leave China in winter. Wintering birds are found in Malaya (Peninsular Malaysia), Sumatra, Borneo and Java.

The situation in mainland South-East Asia is much less clear. Smythies (1953) stated that *nisicolor* is resident in the plains and Karen Hills of southern Burma, the Southern Shan States and Tenasserim. Robson (2000) listed *nisicolor* as resident (subject to some movements) in Thailand (except Central), North and Central Laos, and West Tonkin and central Annam in Vietnam. While *nisicolor* certainly breeds in parts of mainland South-East Asia (the author has heard it in central Annam and P. Round (pers. comm.) has heard it in several areas of Thailand; these are mostly presumed identifications since the birds were not seen and only *nisicolor* is known to be present), this form's status needs re-evaluation. It seems possible that it is merely a breeding, migrant or wintering bird in some of those areas where it is currently thought to be resident.

There is no proof that *H. nisicolor* is actually resident anywhere in South-East Asia. Since calling is entirely restricted to the courting/breeding season in this species, a calling bird is reasonable presumptive evidence of breeding. However, there appears to be no way to distinguish a local breeding bird from a migrant outside the breeding season. Further, their quiet, retiring nature and uncommon status result in few observations.

H. fugax is resident in southern Tenasserim, southern Peninsular Thailand, Malaya (Peninsular Malaysia), Sumatra and Borneo, and some of their satellite islands.

While breeding sympatry between *nisicolor* and *fugax* is not known, with *fugax* known to occur and likely resident in South Tenasserim and *nisicolor* known to occur in Tenasserim, the possibility exists. Further fieldwork is needed to resolve this.

Discussion

Payne (1997) split *H. pectoralis* from the *fugax* group, based largely on the different song of *H. pectoralis.* He was unaware that the song of *H. hyperthyrus* is also

TABLE 1

Measurements (mm) of specimens of the four forms of the *Hierococcyx fugax* complex. Note the long bill of *fugax*, the long wings and tail of *hyperythrus*, and the more pointed wings of the migratory *hyperythrus* and *nisicolor.* All the specimens are housed in the American Museum of Natural History in New York. S.d.=standard deviation.

	H. hyperythrus (5 specimens)	*H. pectoralis* (7 specimens)	*H. nisicolor* (7 specimens)	*H. fugax* (8 specimens)
Culmen (from skull), mean (range), s.d.	26.8 (25.2-27.5) 1.07	25.6 (24.2-27.3), 1.03	25.8 (24.7-27.1), 0.85	29.2 (28.1-30.4), 0.78
Wing (flattened), mean (range), s.d.	202.1 (184.9-211.0), 11.01	172.6 (167.5-179.6), 4.24	177.0 (164.9-181.9), 6.64	173.8 (166.6-178.1), 4.18
Tail, mean (range), s.d.	142.8 (138.8-148.0), 3.65	129.1 (125.5-135.1), 3.53	127.4 (122.4-135.7), 4.51	130.4 (124.9-135.3), 3.03
Longest primary #	8	7=8	8	8=7
Second longest primary— Mean distance from tip (range)	7 (9 once), 4.8 (1.7-8.2)	7 (8 twice), 3.1 (1.6-4.2)	7, 5.1 (0.9-8.6)	8 (7 thrice), 1.9 (0.4-3.8)
Third longest primary— Mean distance from tip (range)	9 (7 once), 14.4 (12.5-15.5)	6 (9 once), 7.4 (5.1-12.4)	9 (6 once), 13.1 (10.4-19.0)	6 (9 once), 8.0 (7.1-16.8)
Fourth longest primary— Mean distance from tip (range)	6, 20.7 (14.5-32.2)	9 (6 once), 13.9 (12.5-15.4)	6(9 once), 17.6 (12.1-22.2)	9 (6 once, 5 once) 14.7 (12.1-18.1)
Fifth longest primary— Mean distance from tip (range)	5, 35.8 (28.1-42.3)	5, 19.4(16.1-23.8)	5, 30.1(23.7-35.1)	5(9 once) 20.6 (18.8-22.5)

different. He stated, "If the songs are the same, then the populations are likely to be conspecific—if the songs are different, then the populations are likely to represent distinct species. If the populations differ both in morphology and song, then it is very probable that the cuckoos involved are different species."

H. hyperythrus and *H. pectoralis* are readily distinguished from each other and from *H. nisicolor* and *H. fugax* by their distinct songs. It would be highly unusual for conspecific cuckoos to have different songs. Further, *hyperythrus* is a highly migratory form with much longer wings and tail, and a much more pointed wing than any of the other three forms. Thus we have a clear case for treating *hyperthrus* and *pectoralis* as separate species.

While the song of *nisicolor* is identical to that of *fugax*, their adult plumages are quite distinct, the adult plumage of *nisicolor* being completely different from their similar immature plumages, while that of *fugax* is a modified immature plumage. Neither breeding sympatry nor hybrids have been recorded between *nisicolor* and *fugax. H. nisicolor* is migratory (at least some populations) with a longer more pointed wing, and a shorter, less robust bill, than *fugax*, which is resident. Thus adult *fugax* with its very different plumage and longer bill is the most distinct of the four forms here considered. It is concluded that because the morphological differences between *fugax* and *nisicolor* are so pronounced, they are best treated as separate species in spite of the fact that their songs are identical.

The recommended English names for the four species are: *H. hyperythrus*, Northern Hawk-Cuckoo; *H. pectoralis*, Philippine Hawk-Cuckoo; *H. nisicolor*, Hodgson's Hawk-Cuckoo; *H. fugax*, Malaysian Hawk-Cuckoo.

With its combination of slaty grey upperparts and streaked underparts, adult *H. fugax* can be distinguished in the field from all the other forms of the *H. fugax* complex. However, except for song and range, field identification of adults of the other three species and the immatures of all four species is quite difficult.

Acknowledgements

Jeff Groth prepared the sonagrams. I wish to thank John Fitzpatrick and Greg Budney of the Library of Natural Sounds at the Laboratory of Ornithology of Cornell University for the use of tape recording equipment. Mr. Tsuruhiko Kabaya provided a second identical tape of *hyperythrus* from Japan. Reviewer David Wells provided a useful critique. Personal communication with Robert Payne was very helpful.

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INSTRUCTIONS FOR AUTHORS

Authors are invited to submit papers on topics relating to the broad themes of taxonomy and distribution of birds. Descriptions of new species of birds are especially welcome and will be given priority to ensure rapid publication; they may be accompanied by colour photographs or paintings. On submission, **two copies** of manuscripts, typed on one side of the paper, **double spaced** and with **wide margins**, should be sent to the Editor, Prof. Chris Feare, 2 North View Cottages, Grayswood Common, Haslemere, Surrey GU27 2DN, UK. **Note that electronic versions are not required on first submission.** Where appropriate half-tone photographs may be included and, where essential to illustrate important points, the Editor will consider the inclusion of colour plates (if possible, authors should obtain funding to support this inclusion of such colour plates).

When papers are accepted, revisions should be returned to the Editor as both a **hard copy,** as outlined above, and also on a 3.5" disk, as **Word or Wordperfect files** for PC. At this stage authors should send their email addresses, as completion of the editing process and proof reading will be undertaken electronically.

Papers should follow the general style:

Title – lower case, centred, bold
Author(s) – lower case, centred, italics

Introductory section without a heading
Primary headings – lower case, centred, bold

Secondary headings – left justified, lower case, italics, bold

English names of animals should begin with capitals.
Numerals – thousands separated by commas, e.g. 12,000
Units of measurement, SI. Space between values and unit, e.g. 12.1 g
Statistical tests in the form: ($r_{28} = 3.12$, $P < 0.01$). ($X^2_3 = 7.31$, n.s.)
Citations to references in text: Author (Date); Author & Author (Date); if three or more authors – Author *et al.* (Date); or (Author(s) Date) etc.

References:
Author, A. (or Author, A. & Author, B.) Date. Title of paper. *Title of journal in italics.* Volume: pages.
Author, A. Date. *Title of book in italics.* Publisher, place of publication.
Author, A. Date. Title of paper/chapter. *In* Editor, A & Editor, B. (Eds.) *Title of book/proceedings in italics.* Pages. Publisher, place of publication.

Address(es): addresses of authors, including emails if desired.

Format for tables (to be typed on separate sheets at end of paper):

TABLE n
Description of table contents, including any abbreviations

	Column A	Column B
Row 1	Data	Data
Row 2	Data	Data

Legends for figures to be typed on one sheet at end of paper, in the form: Figure n. Text of legend, including key to symbols etc.

On a separate sheet, authors should provide an abstract of no more then 150 words. This will be placed on the British Ornithologists' Club website.

Authors are entitled to 10 free offprints (16 if 2 or more authors) of the pages in which papers appear. Additional offprints may be ordered when revisions of manuscripts are returned. Letters confirming acceptance of papers will be accompanied by a form on which authors must assign copyright of their paper to the British Ornithologists' Club, and a reprint order form which gives approximate costs of additional offprints. Authors may be charged for any corrections that they request after their papers have been sent to the pagemaker.

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Volume 122, Number 1, pages 1 - 80

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MEMBERSHIP

All correspondence concerning membership should be addressed to the *Hon. Secretary*. For membership and subscription information, purchase of back numbers of the *Bulletin* or other Club publications see the inside rear cover of Vol. 121 (4), the **Club News Section** of this issue, or pay a visit to the **BOC website: www.boc-online.org**

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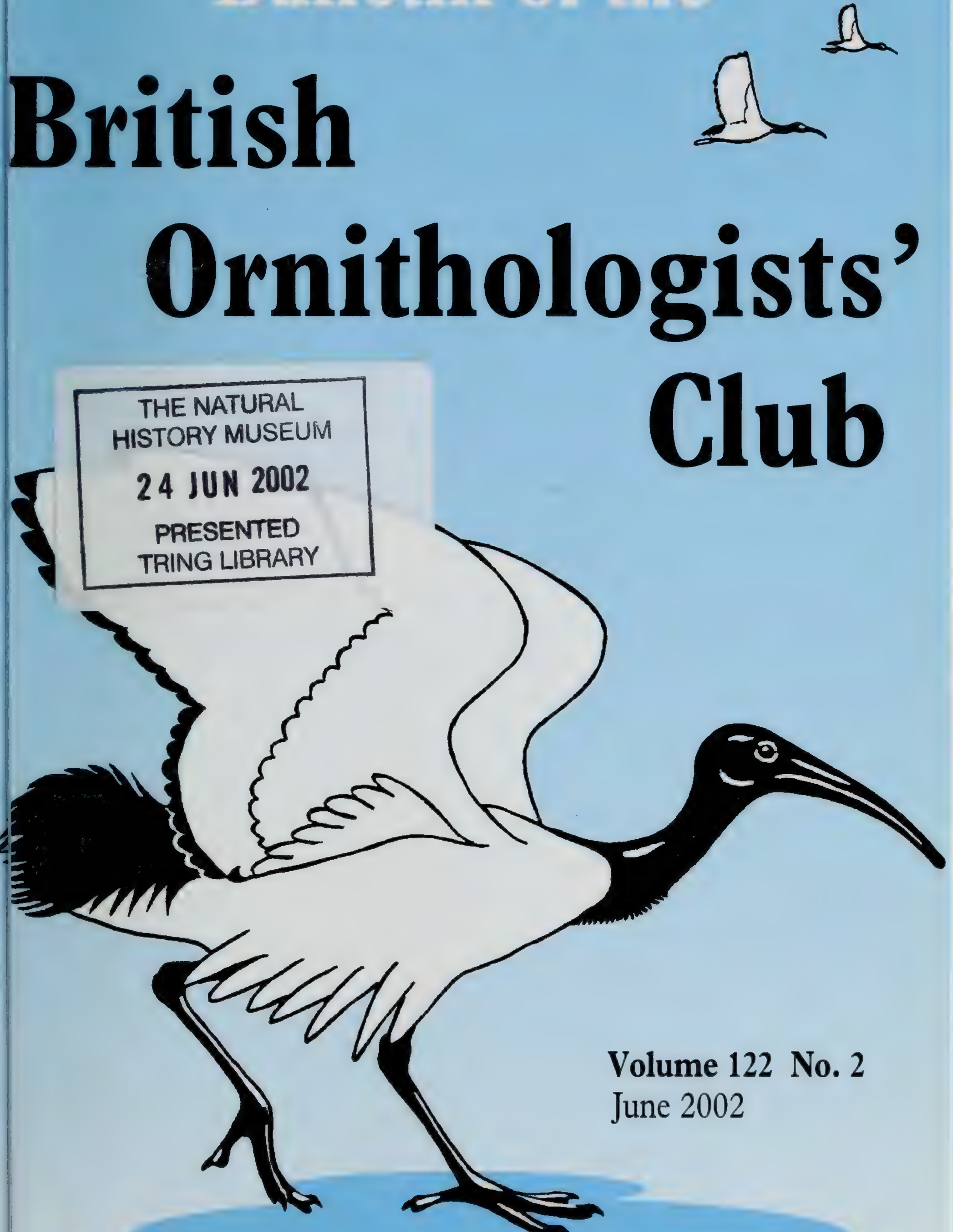

Volume 122 No. 2
June 2002

MEETINGS are held at **Imperial College**, South Kensington, London, SW7, usually in the **Sherfield Building**. The nearest Tube station is at South Kensington; a map of the area will be sent to members, on request. See also website: **http://www.boc-online.org**.

(Limited car parking facilities can be reserved, on prior application to the Hon. Secretary).

The cash bar is open from **6.15 pm** and a buffet supper, of two courses followed by coffee, is served at **7.00 pm.** (A vegetarian menu can be arranged if ordered at the time of booking). Dinner charges are currently **£18.00.** Informal talks are given on completion, commencing at about 8.00 pm.

FORTHCOMING MEETINGS

25 June - Dr Clifford Frith - *'Artful sex - the bowerbirds and their amazing bowers'.*
Clifford is a self-employed natural history photographer, author, publisher, and ornithologist. Early ornithological positions include The Natural History Museum, London, and the Royal Society of London Research Station on Albabra Atoll, Indian Ocean. His PhD was awarded for intensive long-term evolutionary studies of bowerbirds and birds of paradise. A life member of the BOU and AOU, Clifford is an Honorary Research Fellow of the Queensland Museum and, jointly with his wife Dawn, recipient of the RAOU's D.L. Serventy Medal for Ornithology. Together with Dawn he has written, illustrated, and published several small Australian natural history books as well as the large *Cape York Peninsula - a Natural History* (Reed, 1996). Clifford is senior author of *The Birds of Paradise – Paradisaeidae* (1998) of the acclaimed OUP 'Bird Families of the World' series. He and Dawn have recently completed a companion volume about *The Bowerbirds - Ptilonorhynchidae* for a 2002 release. The Friths live within upland rainforest of Queensland, Australia, which they share with Southern Cassowaries, two megapode and four bowerbird species, a bird of paradise, and much more.

Applications to the Hon. Secretary by **11 June** please.

24 September - Dr Joanne Cooper - *'Storm Petrels in the soapdish and Black Robins on the verandah: the birds of the Chatham Islands, New Zealand'.*
From a background in geography and geology (but with a long-term interest in birds), Jo studied the Late Pleistocene avifaunas of Gibraltar for her PhD in the Bird Group of The Natural History Museum. During this time, she also began looking into the Museum's extensive collections of sub-fossil bird remains from the Chatham Islands, originally gathered for Lord Walter Rothschild in the 1890s. One thing led to another and eventually she headed off to New Zealand to pursue the work further. Based at the Museum of New Zealand in Wellington, she also had an opportunity to visit the Islands themselves as a volunteer with the Department of Conservation. Since arriving back in the UK in August 2001, she has returned to the Bird Group, where she now works as a curator.

Applications to the Hon. Secretary by **11 September** please.

5 November - Professor Ian Newton - *'Population limitation in birds: a review of the experimental evidence'.*
Ian began his ornithological career by studying the ecology and feeding behaviour of finches, supervised by David Lack at the University of Oxford. He then moved to work with the Natural Environment Research Council in Edinburgh, studying first waterfowl and then birds of prey. For more than 25 years, he conducted a population study of the Sparrowhawk Accipiter nisus in south Scotland. He has authored about 250 papers in the scientific literature, and several books, including Finches (1972), Population ecology of raptors (1979), The Sparrowhawk (1986) and, more recently, Population limitation in birds (1998). He was elected Fellow of the Royal Society in 1993, and awarded an OBE for 'services to ornithology' in 1999. He is a past President of the British Ecological Society and is current President of the British Ornithologists' Union.

Applications to the Hon. Secretary by **23 October** please.

Future meeting - advance notice
Tuesday 3 December - Jon Hornbuckle - *'The birds of Beni Biological Station, Bolivia'.*

Overseas Members visiting Britain are especially welcome at these meetings, and the Hon. Secretary would be very pleased to hear from anyone who can offer to talk to the Club, in 2003, giving as much advance notice as possible - please contact: Michael Casement, Dene Cottage, West Harting, Petersfield, Hants., GU31 5PA. UK. Tel/FAX:01730-825280 (or Email: mbcasement@aol.com).

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**Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB**

Vol. 122 No. 2 Published 17 June 2002

CLUB NEWS

"A passion for natural history": a two-day seminar based on the life, times and acquaintances of Edward Smith Stanley, the 13th Earl of Derby. As announced in *Bulletin* 122(1): 2, members are invited to attend a two-day seminar on 5 and 6 July 2002. Background information will be found in the summary of Clem Fisher's talk (*Bulletin* 122(1): 5). On 5 July, attendees will visit Knowsley Hall, which houses volumes of zoological and botanical art dating back to the 18th century, for a guided tour and lunch. The day will also include a visit to the Liverpool City Library Rare Books Rooms. On 6 July there will be a series of lectures in the Rex Makin Theatre, County Sessions House, William Brown Street, detailing the work of the 13th Earl of Derby and his colleagues world-wide. The cost will be in the range of £30-35, plus accommodation. For further details contact Dr Clem Fisher (0151 478 4360) and to book contact Sandra Henderson, National Museums & Galleries on Merseyside (0151 478 4538).

Membership News

We regret to report the deaths of M.A. Walmsley (1986-2001), Professor Dr. K.H. Voous (1976-2002), J.D. Lindsay (1968-71, 1989); also former member W. Peckover (1979-1998).

The 907th meeting of the Club was held on Tuesday 26 February, at 6.15 pm, in the Sherfield Building Annexe, Imperial College, and was attended by 20 Members and 14 guests.

Members present were: Dr C.F. MANN (*Chairman*), Miss H. BAKER, Sir David BANNERMAN Bt, P.J. BELMAN, D.R. CALDER, Cdr M.B. CASEMENT RN, Dr R.J. CHANDLER, Revd. T.W. GLADWIN, J.A. JOBLING, D.J. MONTIER, Mrs A.M. MOORE, R.G. MORGAN, P.J. OLIVER, Dr P.W.G. SALAMAN, Dr R.C. SELF, T.R. SMEETON, S.A.H. STATHAM, C.W.R. STOREY, Miss R. TINGAY (*Speaker*) and C.E. WHEELER.

Guests attending were: Lady P. BANNERMAN, Mrs J.B. CALDER, Mrs C.R. CASEMENT, Mrs J.M. GLADWIN, Miss S.I. LARA, Ms K. HOFF, Col and Mrs B.M LEES, P.J. MOORE, Miss K.A. MURRAY, Mrs M. MONTIER, M. NICHOLL, Miss B. RYAN, and Miss P.R. WEBSTER.

Ruth Tingay gave a fascinating presentation of her continuing study of the Madagascar Fish Eagle under the title "*Three-in-a-nest sex romp shocker: implications for the critically endangered Madagascar Fish Eagle*". The following is a brief synopsis:

Previously described as a common species, the island endemic Madagascar Fish Eagle *Haliaeetus vociferoides* is now considered critically endangered. The current distribution of 63 known breeding pairs appears to consist of two geographically isolated sub-populations, occupying increasingly disturbed habitat on the NW and western side of the island. A review of the historical literature suggests a previous distribution across the entire island and indicates a drastic population decline over the last 50 years.

Compounding this apparent decline is an unusual breeding strategy amongst some Madagascar Fish Eagles, consisting of one or two extra-pair birds involved with the nesting activities of breeding pairs. This behaviour may be influencing the species' current distribution and abundance, and may also limit its potential for population recovery.

The current study aims to use DNA fingerprinting techniques to compare the historical and modern genetic diversity of the Madagascar Fish Eagle, to infer population history and dynamics, and to assess the level of in-breeding amongst the extant population. Blood samples collected from living specimens will be compared with tissue samples taken from Madagascar Fish Eagle museum specimens to facilitate a population history over a 144-year period, and thus the detection of genetic bottlenecks, which will either confirm or refute the supposition that the population has suffered a recent drastic decline. Blood samples from contemporary individuals in both sub-populations will be used to examine the extent of gene flow both within and between sub-populations, to determine whether they are both geographically and genetically distinct. DNA fingerprinting will also be used to test for paternity amongst polyandrous trios and their offspring which, coupled with detailed behavioural observations at the nests, should provide a greater insight into the social hierarchy of this unusual breeding strategy.

Preliminary results indicate a more complex social hierarchy and range of breeding strategies than was first thought. The following breeding strategies have been observed within one sub-population over a three-year period: monogamy, polyandry, polygyny, polygynandry, and potentially homosexuality. This diversity is unique amongst raptor species and very rare amongst other avian taxa, perhaps with the exception of the Dunnock *Prunella modularis*. Co-operative breeding in other species has often been explained as a response to a specific environmental condition. For example, polyandry (at least 2 males with 1 female at one nest) may occur as a result of food shortage, which may favour the co-operation of males to permit a higher probability of successful reproduction. However, polygyny (at least 2 females mating with the same male) may occur as a result of high food availability, whereby the single male is able to provide food for two females and thus double his probability of successful reproduction. If these two breeding strategies are occurring within the same locality, it would seem unlikely that they evolved as an environmental response to two opposing food conditions and therefore another explanation must be sought.

Preliminary DNA results indicate that the primary pair of some polyandrous trios are first-order relatives, thus increasing the possibility that in-breeding may be occurring. Unsurprisingly, the primary male has been shown to be the dominant male and invests the most paternal effort at the nest. However, DNA fingerprinting has demonstrated that the subordinate male sired all the offspring at each nest.

The remaining genetic analyses are due to take place later this year and it is anticipated these may offer further insight into the bizarre social hierarchy of this critically endangered species. The results of the current study will be used to inform conservation planning should a re-introduction of the Madagascar Fish Eagle be necessary.

Ruth Tingay and Eloi Fanameha ring and take a blood sample from a 7-week-old Madagascar Fish Eagle. DNA paternity tests have revealed an unlikely father at many nests. Photograph by Martin Gilbert.

BRITISH ORNITHOLOGISTS' CLUB

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TRUSTEES ANNUAL REPORT FOR 2001

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CONSTITUTION

The British Ornithologists' Club was founded in October 1892. It currently operates under Rules revised in 2000 and approved at a Special General Meeting on 31st October of that year. Members of the Committee, who are also the trustees of the Club, are listed above with the dates of their appointment. Committee members are elected for a term of four years, with the exception of the *Honorary Secretary* and *Honorary Treasurer*, who are both subject to re-election at each Annual General Meeting.

OBJECTS OF THE CHARITY

The promotion of scientific discussion between Members of the British Ornithologists'Union and others interested in ornithology, and to facilitate the dissemination of scientific information concerned with ornithology, with a particular emphasis on avian systematics, taxonomy and distribution.

MEETINGS

Eight evening meetings were held in 2001 at Imperial College, London; the 900th meeting was celebrated with a special dinner on 3 April, at the Rector's Residence,170 Queensgate. A total of 275 (196 members and 79 guests) attended these meetings, which represented an average attendance of 34.4. The programme of speakers during the year again covered a wide variety of ornithological subjects in both Britain and overseas. As for the past three years, the May meeting following the AGM was in the form of a social evening, during which informal short talks and brief discussions were contributed by eight participants, on a range of topical subjects. Summaries of all these talks are to be found in the Club News section of the Bulletin.

THE BULLETIN

The 280 pages of Volume 121 contained 38 papers. As usual these were global in their geographical coverage and included studies of a wide range of taxonomic, nomenclatural and distributional topics. Two new species were described, a laughingthrush from Vietnam and a wagtail from Cambodia, and a new subspecies of Red Knot was described from Siberia. Further papers justified the elevation of three tapaculo taxa to species rank and highlighted the occurrence of a probable new taxon of owl from Indonesia. The interval between receipt of papers and publication ranged from six to 30 months, averaging 13 months. The longer intervals, over 20 months, resulted from delays in the review process (many reviewers and authors spend considerable periods in the field) and from authors requiring extended periods to complete revisions. In 2001, 60 papers were received and 31 have been accepted to date.

The readership questionnaire that was distributed with the Bulletin in 2000 elicited 99 responses. The vast majority of these indicated approval of the current content and coverage. During 2001, however, some changes have been introduced. The "Club Notices" have been retitled "Club News" and, in addition to reports of meetings and the annual report and accounts, they now include brief announcements and news of members, together with a small number of short book reviews. Our successful move to the new printer, Crowes, in 2000 facilitated production on an improved quality of paper and we have taken advantage of this to increase the number of colour illustrations. Criticism of the "cardboard" cover of 2000 led to a complete redesign, kindly prepared by Julian Hume. This received majority approval by the Club Committee and most Club members who have commented have done so favourably; two members, however, expressed horror! A number of non-members who encountered the new appearance on library showcases sent messages expressing surprise that the Bulletin had undergone such a transformation, commenting further that this had stimulated them to open the journal, leading to further surprise at the interesting content. Whether this, and the change in membership structure, will promote membership remains to be discovered.

As ever, the Hon. Editor is greatly indebted to the reviewers who devote their time and expertise that enables us to sustain the quality of papers published. Eng-Li Green, of Alcedo Publishing, who converts the electronic files into their final publishable form, works with efficiency and speed to meet the deadlines imposed by the Editor and produces the attractive and readable format in which our journal now appears. Crowes work with similar alacrity through the printed proof stage to meet our publication dates. Gratitude also goes to Mary Muller, who prepares the index, Effie Warr, who helps in many ways and in 2001 took on the additional task of preparing authors' reprints, and Michael Casement, who produces the cover information and Club News section.

BULLETIN SALES

Sales to Institutional Subscribers totalled 126, with 26 in the UK and 100 overseas (26 countries). Of the latter, 41 were to the United States of America, 8 to Australia and 7 to Germany. Figures include 8 free copies in UK (to meet legal requirements and for copyright libraries) and 8 free copies/exchanges abroad.

OTHER PUBLICATIONS

In May the Committee restructured the Publications Sub-Committee and appointed the Revd. T. W.Gladwin to succeed Dr R.P. Prŷs-Jones as Chairman, the other members being Prof. R.A. Cheke; S.P. Dudley, representing the British Ornithologists' Union (BOU); the Honorary Publications Officer, J. A Jobling; the Honorary Treasurer, D. J. Montier; and N.J. Redman. In addition Mrs. A M. Moore kindly served on the Sub-Committee for a short period for the benefit of continuity and her experience.

As a result of delays, to both the *Bird Atlas of Uganda* and *Proceedings of the Conference: Why Museums Matter* ; *Avian Archives in an Age of Extinction*, no new publications appeared during the year. *The Bird Atlas of Uganda* has made good progress in accordance with revised and more realistic schedules, and it is hoped that both works will finally be published in 2002.

The Committee having approved reductions in prices for *Birds, Discovery and Conservation* and *Avian Egg-shells; An Atlas of Scanning Electron Micrographs,* these titles were placed on special offer. As a result of the continuing demand for the Club's past publications, sixty-six books and various back numbers of the Bulletin and copies of specific articles were sold during the year. As reported last year it has been agreed that future publications in the *BOU Checklist* series will be a joint venture between the BOC and BOU and the first jointly produced titles are planned to appear in 2002. The mutual benefits to both organisations and the potential benefits to ornithology from such co-operation are considerable. Proposals for the establishment of a Joint Publications Committee have been approved both by the Committee and the Council of the BOU.

COMMITTEE

The Committee met six times during the year, and the attendance was 85%. The chief topics for discussions were the Club Publications and their storage and distribution. The Committee accepted, with regret, the resignation of Dr Robert Prŷs-Jones, due to the pressures of other work, and the Revd. T.W. Gladwin was elected as Vice-Chairman, and Chairman of the Publications Sub-Committee, in his place.

The BOC website was launched in January, mainly due to the commendable efforts and expertise of Dr. P.G.W Salaman, who was subsequently elected to the Committee and appointed Hon. Website Manager. Plans were progressed for the electronic archiving and marketing of the complete set of Bulletin BOC.

Other matters discussed concerned the exploration of closer links with the BOU for the joint publication and marketing of the *BOU Checklist* and BOC *Occasional Publications* series, and opportunities for sharing storage facilities.

Following further cost increases by Imperial College, dinner charges were increased to £18, with effect from January 2002.

The Committee continues to be most grateful to the Trustees of the Herbert Stevens Trust Fund (Mr Nigel Crocker, Mr Richard Price and Mr Peter Oliver) for their time and expertise advising on the performance of the Fund.

MEMBERSHIP

There were 561 paid-up Members at 31 December 2001 - 299 with addresses in the U.K, and 262 overseas (46 countries). The Club welcomed 30 new Members, including 7 previous non-Member Subscribers, taking advantage of the Rule change to join as full Members.

But it is with great regret that the Committee reports the deaths in the past year of seven Club Members: Dr P.A. Clancey (1938-2001, Hon. Life Member), P.B. Clarke, (1989-2001), H.J. Dickinson (1965-2000), P. Gladstone (1998-2000), E. Gorton (1953-2001), N.S. Malcolm (1989-2001), and M.L.R. Romer (1962-2001, Committee 1964-68).

There were 13 resignations, and 21 were removed under Rule(7), resulting in a net decrease in membership of 11, during the year.

The publication of the Members'Address List annually with the Index, was discontinued in 1997, in order to reduce costs. The Hon. Secretary continues to prepare a list annually, and duplicated copies of the Membership 2002, including e-mail addresses (if known) are available, free of charge, for any Member requesting a copy, though a stamped and addressed envelope (A5), or a contribution towards the cost of postage, will be gratefully received.

LEGACY

In December 2001, the Club was notified that it would be receiving a bequest from the estate of the late Dr Phillip Clancey, an *Honorary Life Member* who joined the Club in 1938. The exact amount will not be known for some months.

RISK REVIEW

The Committee has reviewed the major risks to which the Club is exposed, and operates systems that are designed to mitigate those risks.

FINANCE

Unrestricted Funds. A further £5,000 was transferred to the Unrestricted Designated Fund during the year, bringing the total at 31 December 2001 to £10,000 as a reserve for future publications, particularly for those already in progress. The Club's unrestricted resources, largely built up from a bequest in 1964 from the estate of Herbert Stevens and subsequent growth in the underlying investments, support the Club's objective of publishing specialised ornithological works that would be viewed as uneconomic by commercial publishers. These reserves also allow the Club to continue in developing its selective publishing role in a planned joint venture with the British Ornithologists' Union

Investment Policy. The Herbert Stevens Fund, which covers almost the whole of the investments, is managed by independent trustees on behalf of the Club. The Committee reviews their reports at least twice a year and considers that the individual investments in charity unit trusts are appropriate to the Club and provide a satisfactory level of income and scope for capital growth. Although the market value of the investments fell by 8.7% over the year, this proved to be a more resilient performance than the stock market as a whole, while maintaining an income yield of 4.7%.

Financial results for the year ended 31 December 2001. Total revenue for 2001 amounted to £32,410, approximately £3,300 less than the previous year. Subscription income, including tax recovered on Gift Aid and remaining covenants, was virtually unchanged at £10,900. Investment income was down on the previous year by only about £500, which was a satisfactory outcome in a year of falling interest rates and slowing dividend growth. Sales of "other publications" fell by £2,700 after the boost in 2000 when the Con Benson Type Specimens catalogue caused an initial flurry of sales.

Expenditure during 2001 rose by about £3,000, with two items accounting for most of the additional costs. Firstly, the Committee agreed a donation of £1,500 to the National Museums and Galleries on Merseyside towards the cost of the catalogue for the forthcoming 13th Earl of Derby Exhibition. Secondly, a total of £1,099 was spent on computer software and equipment for the development of a comprehensive index and database of *Bulletin* back-numbers, as part of the Club's website. Cost of meetings increased during the year, further expenditure was incurred on editing the forthcoming *Bird Atlas of Uganda*, and a small amount was spent on purchasing an additional stock of *Birds, Discovery and Conservation* at a favourable price.

The overall result for the year was an excess of income over expenditure of £8,173 compared with £14,569 in 2000. Despite the lower figure, the surplus was still sufficient to allow a further £5,000 to be added to the Unrestricted Designated Fund towards the cost of future publications. Nevertheless, total assets of the Club fell by nearly £13,000, the decline of £21,000 in the market value of investments, principally in the Herbert Stevens Fund, overshadowing the year's operating surplus. This Fund of £218,000 is invested in three charity unit trusts and, as in many trusts investing in quoted securities, they suffered from falling share values, offsetting most of the growth of the previous two years, though still leaving the Club at 31st December 2001 with overall net assets of about £310,000.

TRUSTEES' RESPONSIBILITIES

Under the Charities Act 1993, the trustees are required to prepare a statement of accounts for each financial year which give a true and fair view of the state of affairs of the charity at the end of the financial year and of the incoming resources and application of resources in the year. In preparing the statement the trustees are required to :

- select suitable accounting policies and then apply them consistently;
- make judgements and estimates that are reasonable and prudent;
- state whether applicable accounting standards and statements of recommended practice have been followed, subject to any material departures disclosed and explained in the statement of accounts.
- prepare the financial accounts on the going concern basis unless it is inappropriate to presume that the charity will continue its operations.

The trustees are responsible for keeping proper accounting records which disclose with reasonable accuracy at any time the financial position of the charity and to enable them to ensure that any statement of account prepared by them complies with the regulations under section 41(1) of the Charities Act 1993. They are also responsible for safeguarding the assets of the trust and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

Approved and signed on behalf of the Trustees

C. F. Mann
Chairman
Date: 30th April 2002

BALANCE SHEET — 31st December 2001

		2001		*2000*	
	Notes	£	£	*£*	*£*
FIXED ASSETS					
Tangible Assets	2		-		*10*
INVESTMENTS					
At Market Value	3		**219,097**		*240,075*
			219,097		*240,085*
CURRENT ASSETS					
Stock of Publications		**100**		*100*	
Cash at Bank and in hand		**2,314**		*4,407*	
Cash on Deposit		**94,801**		*86,343*	
Prepayments		**375**		*375*	
Other Debtors		**654**		*103*	
		98,244		*91,328*	
CURRENT LIABILITIES					
Subscriptions in advance		**(3,728)**		*(4,161)*	
Creditors falling due within one year		**(3,489)**		*(4,323)*	
			91,027		*82,844*
TOTAL ASSETS			**310,124**		*322,929*
FUNDS					
Unrestricted					
Designated	4		**10,000**		*5,000*
Other	5		**291,404**		*309,623*
			301,404		*314,623*
Restricted	6		**8,720**		*8,306*
			310,124		*322,929*

Approved and Signed on behalf of the Trustees
C. F. Mann
Chairman
Date: 30th April 2002

STATEMENT OF FINANCIAL ACTIVITIES— 31st December 2001

	2001			*2000*
	Unrestricted	**Restricted**	**Total**	*Total*
	£	**£**	**£**	*£*
INCOMING RESOURCES				
SUBSCRIPTIONS				
Members	**7,302**	-	**7,302**	*6,711*
Non-member subscribers	**3,046**	-	**3,046**	*3,778*
Income Tax recoverable under Gift Aid & Deeds of Covenant	**552**	-	**552**	*409*
	10,900	-	**10,900**	*10,898*
DONATIONS	**38**	-	**38**	*78*

Statement continued...

			2001		*2000*
	Notes	Unrestricted	Restricted	Total	*Total*
		£	£	£	*£*
INVESTMENT INCOME					
Herbert Stevens Trust Fund		10,350	-	10,350	*10,633*
Barrington Trust Fund		37	-	37	*40*
Interest received		4,103	414	4,517	*4,747*
		14,490	414	14,904	*15,420*
SALES OF PUBLICATIONS					
Bulletin		694	-	694	*929*
Other publications		981	-	981	*3,680*
		1,675	-	1,675	*4,609*
MEETINGS		4,884	-	4,884	*4,707*
OTHER INCOME		9	-	9	*47*
TOTAL INCOME		31,996	414	32,410	*35,759*
RESOURCES EXPENDED					
CHARITABLE EXPENDITURE					
MEETINGS					
Room and equipment hire, speakers' expenses, etc.		1,630	-	1,630	*1,239*
Restaurant		5,391	-	5,391	*4,693*
SPONSORSHIP 13th Earl of Derby Exhibition Catalogue		1,500	-	1,500	-
BOC BULLETIN					
Production, printing and distribution		11,348	-	11,348	*12,542*
Computer software for developing a comprehensive index for website		1,099	-	1,099	-
OTHER PUBLICATIONS					
Purchases		100	-	100	-
Future Publications		930	-	930	*367*
Publicity, postage and packing		163	-	163	*293*
ADMINISTRATION	7	2,076	-	2,076	*2,056*
TOTAL EXPENDITURE		24,237	-	24,237	*21,190*
EXCESS OF INCOME OVER EXPENDITURE		7,759	414	8,173	*14,569*
(Reduction) / Increase in value of investments		(20,978)	-	(20,978)	*8,851*
		(13,219)	414	(12,805)	*23,420*
TOTAL FUNDS brought forward at 1st January 2001		314,623	8,306	322,929	*299,509*
TOTAL FUNDS at 31st December 2001		301,404	8,720	310,124	*322,929*

NOTES TO THE ACCOUNTS — 31st December 2001

ACCOUNTING POLICIES

a) Basis of Accounts. The Financial Statements are prepared under the historical cost convention as modified by the inclusion of investments in the Herbert Stevens and Barrington Trust Funds at market values. They are also prepared in accordance with the Financial Reporting Standard for Smaller Entities (effective March 2000) and follow the recommendations in *Accounting and Reporting by Charities : Statement of Recommended Practice* Issued in October 2000.

b) Investments and Cash Deposits. The Herbert Stevens and Barrington Trust funds are invested in quoted UK charity unit trusts and shown in the Balance Sheet at year-end market values. Income from these funds and from cash deposits is included in the Statement of Financial Activities on a receipts basis.

c) Subscriptions. Subscriptions for the current year and any arrears are included in Incoming Resources in the Statement of Financial Activities. Subscriptions received in advance are carried forward in the balance sheet as current liabilities.

d) Expenditure is accounted for on an accruals basis.

e) Depreciation. Depreciation is calculated to write off fixed assets over their expected useful lives at an annual rate of 10% on cost.

f) Publications. The cost of publications is written off in the Statement of Financial Activities as incurred except for a nominal stock value of £100 carried in the Balance Sheet.

2. TANGIBLE FIXED ASSETS

	Projection Equipment
	£
Cost at 1st January and 31st December 2001	**100**
Accumulated depreciation at 1st January 2001	**90**
Charge for the year	**10**
At 31st December 2001	**100**
Net Book Value: At 31st December 2001	**-**
At 31st December 2000	*10*

3. INVESTMENTS - at market value

	2001	*2000*
	£	£
Herbert Stevens Trust Fund	**218,027**	*238,832*
Barrington Trust Fund	**1,070**	*1,243*
	219,097	*240,075*

4. UNRESTRICTED DESIGNATED FUND

for future publications	2001
	£
Balance at 1st January 2001	**5,000**
Designated during the year	**5,000**
Balance at 31st December 2001	**10,000**

5. OTHER UNRESTRICTED FUNDS

	GENERAL FUND	HERBERT STEVENS TRUST FUND	BARRINGTON TRUST FUND	TOTAL
	£	£	£	£
Balances at 1st January 2001	69,548	238,832	1,243	309,623
Reduction in value of investments during year		(20,805)	(173)	(20,978)
Surplus of income over expenditure	7,759	-	-	7,759
Transfer to Unrestricted Designated Fund	(5,000)	-	-	(5,000)
Balances at 31st December 2001	**72,307**	**218,027**	**1,070**	**291,404**

Notes to the Accounts — 31st December 2001 continued...

6. RESTRICTED FUNDS

	PUBLICATIONS FUND	BIRD ATLAS OF UGANDA FUND	TOTAL
	£	£	£
Balances at 1st January 2001	4,998	3,308	8,306
Interest - gross	249	165	414
Balances at 31st December 2001	5,247	3,473	8,720

7. ADMINISTRATION EXPENSES include;

	2001	*2000*
	£	£
Audit and Independent examination fees	**550**	*550*
Depreciation of tangible fixed assets	**10**	*10*

8. REIMBURSEMENT OF EXPENSES

Committee members are reimbursed for expenses incurred by them on behalf of the Club. The amount reimbursed during the year was **£2,364** *(2000 £879)*

INDEPENDENT EXAMINERS REPORT TO THE TRUSTEES OF THE BRITISH ORNITHOLOGISTS' CLUB

This is a report in respect of an examination carried out on the accounts set out on pages 7 to 10 under Section 43 of the Charities Act 1993 and in accordance with directions given by the Charity Commissioners under Sub-section 7(b) of that Section.

Respective responsibilities of trustees and independent examiners

As described on page 6 the Trustees are responsible for the preparation of the accounts and they consider that Charities Act 1993 Section 43(2) (audit requirement) does not apply. It is our responsibility to carry out procedures designed to enable us to report our opinion.

Basis of Opinion

This report is in respect of an examination carried out under section 43 of the Charities Act 1993 and in accordance with the directions given by the Charity Commissioners under section 43(7)(b). An examination includes a review of the accounting records kept by the charity trustees and a comparison of the accounts presented with those records. It also includes a review of the accounts and making such enquiries as are necessary for the purposes of this report. The procedures undertaken do not constitute an audit.

Opinion

No matter has come to our attention in connection with our examination which gives us reasonable cause not to believe that in any material respect:

(i) accounting records have been kept in accordance with Section 41 of the Charities Act 1993; or

(ii) the accounts accord with those records; or

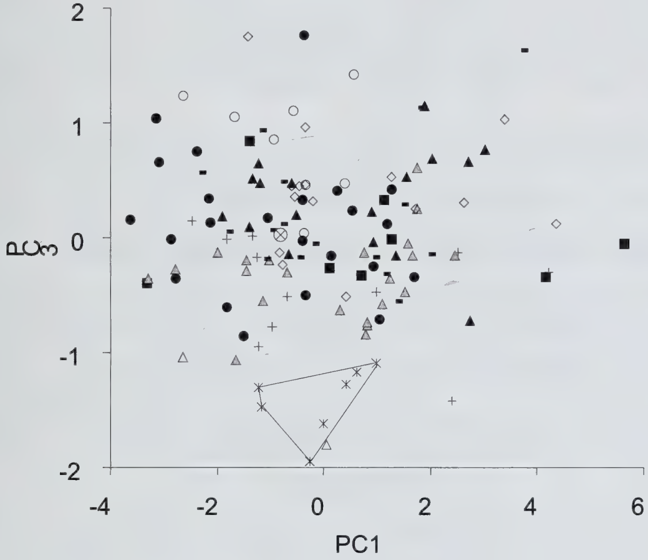
(iii) the statement of accounts complies with the accounting requirements of the Charities Act 1993.

No matter has come to our attention in connection with our examination to which, in our opinion, attention should be drawn to enable a proper understanding of these accounts.

Porritt Rainey & Co.
Chartered Accountants

ERRATUM

In the paper by Frédéric Jiguet, on the taxonomy of the Kelp Gull *Larus dominicanus* (*Bull. Brit. Orn. Cl.* 122 : 50-71, 2002), the scatter diagram in Fig. 2b was in fact the same as that reproduced in Fig. 2a. The correct scatter plot is below, and shows the plot of Principal Components PC1 and PC3, resulting from a PCA performed on 131 adult Kelp Gulls, using five biometric characters. Antarctic birds are enclosed by the line.



BOOK RECEIVED

Watling, D. 2001. *A guide to the birds of Fiji and Western Polynesia including American Samoa, Niue, Samoa, Tokelau, Tuvalu and Wallis & Fortuna*. 272 pp, 16 colour plates by Chloe Talbot Kelly. Environment Consultants (Fiji) Ltd, Suva, Fiji. ISBN 982-9047-01-06. Obtainable from: Environmental Consultants (Fiji) Ltd, Box 2041, Government Buildings, Suva, Fiji, or by email to watling@is.com.fj, or through www.pacificbirds.com US$20.

Dick Watling laments, in his Preface, that his wonderful *Birds of Fiji, Tonga and Samoa* (Millwood Press, 1978) did not stimulate an interest in the region's birds in the local people, or contribute significantly to the birds' conservation. This was at least in part because the book was too large and its production too glossy to be affordable to local people. His attempt to rectify this has led to the evolution of this excellent guide.

The book describes and illustrates the birds of the island groups covered. Each species account is simple, with brief details of identification, behaviour, distribution, possible confusion species and breeding status and, where appropriate, conservation concerns and geographical variation. Small vignettes in the margin highlight habitats and threats. Introductory chapters describe the region and its ornithology, and conservation problems and possible tactics. Concluding sections offer advice on birding in the region, a glossary of terms and acronyms, and checklists for the island groups.

Dick Watling expresses clear concerns for bird conservation in the region and his Preface ends by listing two major requirements. First, conservation strategies must benefit local people, rather than calling for sacrifices on their part. Second, " and perhaps more importantly, we need flourishing wildlife clubs for local children, so as to build a constituency of aware and concerned citizens who are prepared to mount a locally credible campaign for the conservation of birds in their own right. This will be far more effective for conservation than any amount of planning, external assistance and intervention." Thanks to the South Pacific Regional Environment Programme, 1,500 copies of the book are being distributed free to schools, universities, colleges and libraries throughout the region, and cost price copies are available from the author to regional students. The compilation of the book, and its distribution in this way, are initiatives that will hopefully contribute to Dick Watling's identified requirements. I wish him every success and also hope that this very reasonably priced volume will find its way in to the libraries of those interested in island ornithology and conservation world-wide.

Chris Feare

SPECIAL OFFER

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Offer ends 30 September 2002

The Kimberley Pipit: a new African species

Richard Liversidge & Gary Voelker

Received 28 November 2000

The biology of African pipits *Anthus* is poorly known. For example, the incubation and fledging periods are known for only two of the eleven breeding species in Southern Africa. This lack of interest has been exacerbated by the confusion provoked by several recent changes in and conflicting opinions about the taxonomy of this genus in the major ornithological works covering pipits in the region (Clancey 1990, Keith *et al*. 1992, Voelker 1999a).

During investigations aimed at discovering the extent to which pipit taxa separated on morphological/behavioural grounds were also separable on the basis of their DNA, primarily to establish the validity of the Long-tailed Pipit *Anthus longicaudatus* (Liversidge 1996), DNA evidence suggested that one of the specimens examined was, in fact, a new taxon (Voelker 1999a). One of the freshly-collected specimens, from Kimberley, South Africa, had been identified as the Long-billed Pipit *Anthus similis,* but it proved to be a distinct species closer in relationship to the Malindi Pipit *A. melindae*, from coastal Kenya, than any other pipit (Voelker 1999a). Its DNA configuration was referred to as "*similis* (1)" in the text and cladogram by Voelker, whereas the established *Anthus similis* species was referred to as "*similis* (2)."

Referring back to the voucher specimen of *similis* (1) and comparing it with a series of *Anthus similis* loaned from the Bloemfontein National Museum, several differences were established between the two forms. Indeed, from the six specimens loaned it was found that one had also been misidentified and belonged to this new species, "*similis* (1)".

Four years of fieldwork have allowed us to establish satisfactory differences that can be observed in the field, and to record courtship, song and nesting of the new species. Other specimens have been collected from the same locality as the original specimen. The new species can be identified, with difficulty, both in the hand and in the field, and we name it:

Kimberley Pipit *Anthus pseudosimilis*, sp.nov.

Holotype

McGregor Museum, Kimberley registration no. MMK/B/2548 adult male. 13 July 1995, Keeley Park (28° 45' S. 24° 47'E) Kimberley, South Africa. Collected by C.Anderson, B.Wilson and R.Liversidge. Skin, blood and tissue deposited at the McGregor Museum and blood at Burke Museum, Seattle.

Diagnosis

The holotype of the Kimberley Pipit was first identified as a Long-billed Pipit. However, its DNA profile differed from the latter species and we have now established that

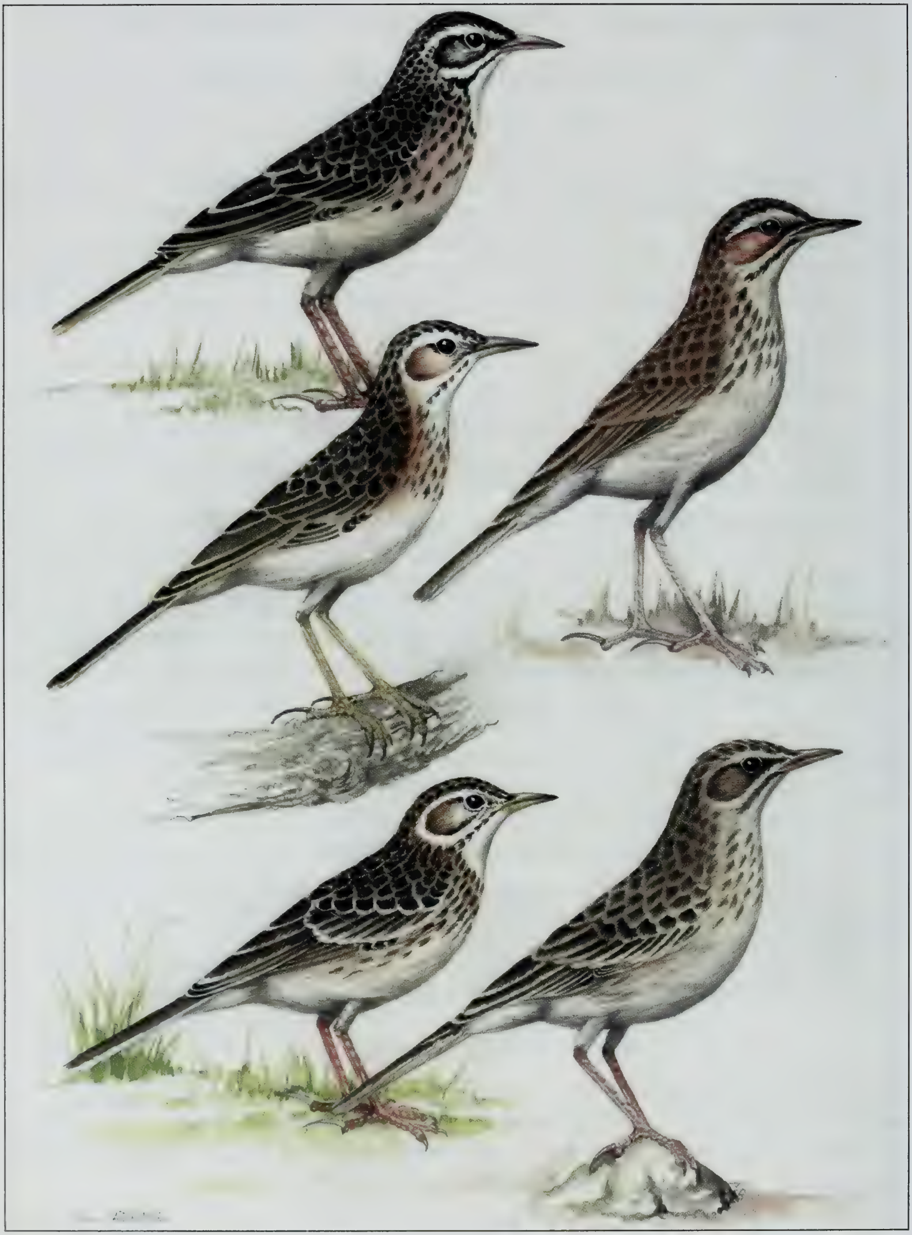


Figure 1. The five larger streaked-backed pipits that occur in sub-equatorial Africa. Top left: Mountain Pipit *Anthus hoeschii*, which is darker and more heavily patterned. Middle left: Wood Pipit *Anthus nyassae*. Bottom left: the smaller African Pipit *Anthus cinnamomeus*. Top right: Kimberley Pipit *Anthus pseudosimilis*. Bottom right: Long-billed Pipit *Anthus similis*

there are morphological differences between these two very similar birds. The Kimberley Pipit is a streak-backed, streak-breasted, long-legged terrestrial pipit, with conspicuous superciliary stripe, buff or rufous patch on side of face, distinct black malar stripe and pale unmarked chin. Gape conspicuously yellow, sometimes orange-yellow, when feeding. Wing formula with P6-8 emarginated, and P5 markedly shorter than P6. Differs from geographically sympatric Buffy *A. vaalensis* and Plain-backed Pipits *A. leucophrys* in having streaked back and breast, from African Pipit *A. cinnamomeus* in having darker brown streaks on back, a more extensive breastband with generally heavier streaking, and by its larger size. Distinguished from very similar Long-billed Pipit by different wing formula and primary emargination, shorter bill, longer hind-claw, more distinct cream superciliary stripe, rufous ear coverts and black malar stripe, and also by behaviour and breeding biology (see below). Readily separable from geographically allopatric but genetically closely related Malindi Pipit which has heavier streaking on the back, thinner malar stripe and streaking on the belly and flanks.

Description of the holotype

Upper parts generally umber-brown, feathers with darker brown centre and paler edges forming a neat pattern on the crown and with broader dark centres on nape and mantle extending less noticeably onto back, scapulars and tail coverts. Supercilium distinct and pale creamy-buff, face with rufous ear-coverts streaked finely with buff and then buff below this. Paler moustachial stripe with dark thin line above extending from the ear coverts to meet the centre of the thin dark line of the lores at the mandible. Distinct dark brown malar stripe. Pale chin. Underparts pale buff with slightly darker chest band on which broad dark brown streaks extend across the chest. Remiges dark brown, edged narrowly buff, as are the greater and lesser wing coverts, with broader pale buff at the ends forming two pale bars. Underwing buff with paler base of remiges. Tail dark brown with very narrow buff edges. Outer tail feathers with noticeably white outer vane and inner terminal half. Dorsally the quill of the outer tail feather is very dark. Bill dark horn with pale yellowish at the base of lower mandible. Legs pale horn.

Paratypes

The following paratypes were collected at the same locality as the holotype in accordance with Article 72.1.2 of the International Code of Zoological Nomenclature (ICZN 1999). 1. MBM5735 adult male, 9 August 1998, Keeley Park (28º45’ S 24º 47’ E) Kimberley. Collected by G. Voelker and R. Liversidge. Skin and associated tissue (GAV1088) deposited at Barrick Museum of Natural History, University of Nevada, Las Vegas. 2. MBM5736 adult male, 9 August 1998. Keeley Park (28º 45’ S. 24º 47’E), Kimberley. Collected by G. Voelker and R. Liversidge. Skin and associated tissue (GAV 1100) deposited at Barrick Museum of Natural History, University of Nevada, Las Vegas. 3. MBM5738 adult male, 9 August 1998, Keeley Park (28º 45’ S 24º 47’ E), Kimberley. Collected by G. Voelker and R. Liversidge. Skin and associated tissue

(GAV 1087) deposited at Barrick Museum of Natural History, University of Nevada, Las Vegas. 4. Collector's No. 1089. Adult male, 9 August 1998, Keeley Park (28º 45' S. 24º 47' E), Kimberley. Collected by G. Voelker and R. Liversidge. Skin deposited at The Natural History Museum, Tring, England (BM(NH) Reg. No. 2002.1.1); associated tissue (GAV 1089) deposited at the Barrick Museum of Natural History, University of Nevada, Las Vegas. 5. MBM5734 adult female, 9 August 1998, Benfontein Farm (28º 50' S 24º 50' E), 8 km east of Kimberley. Collected by G. Voelker and R. Liversidge. Skin and associated tissue (GAV1096) deposited at Barrick Museum of Natural History, University of Nevada, Las Vegas.

Table 1 lists 17 specimens considered to be Kimberley Pipits, mainly by virtue of their wing formula and Fig. 1 shows the Kimberley Pipit together with four other southern African streaked-backed pipits with which confusion is possible.

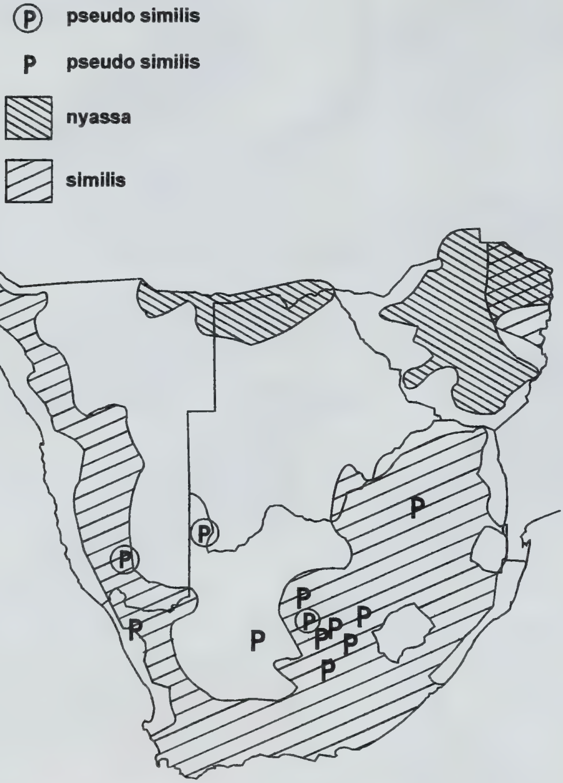


Figure 2. The known distribution of the Kimberley Pipit: P indicates the locations of specimens, P in a circle indicates the locations of confirmed sightings. The distributions of two species, *A. similis* and *A. nyassae*, that are and are possibly, respectivelty, sympatric with the Kimberley Pipit follow Harrison *et al.* (1997).

Paratype variation.

The ear coverts are variable in the amount of buff or browner colouration. The malar stripe is generally darker and more prominent than in the holotype, except in MBM 5738, which has a thinner stripe. MBM 5736 has buffy-tinged outermost rectrices, unlike the white outer rectrices of other paratypes and the holotype. BMNH 2002.1.1 and MBM 5736 have one or two (respectively) streaked undertail coverts.

Nest and eggs

Two nests have been found, one on 9 November 1998 with two eggs, which were broken by cattle before being measured, and the other with three chicks from 27 October to 11 November 1998. One had a roundish tunnel entrance into a low grass tuft, the tunnel being *c.* 15 cm long through grass to the nest cup. The second nest was very well concealed at grass roots level, deeply hidden under overhanging leaves and not visible from above.

The eggs have a pale bluish-white background with neat dark blobs widely dispersed.

Habitat

Generally found where the vegetation is short, usually < 15 cm but sometimes < 30 cm where there is also bare ground. The Kimberley Pipit has been observed by the authors in open grassveld, on open red Kalahari sandveld, karooid vegetation, panveld and open pan surrounds as well as limestone areas and dry river beds.

Distribution

The first specimens, identified by DNA, all came from Kimberley. The other specimens listed in Table 1 indicate a distribution from Namaqualand to Middelburg in the central karoo, through the Free State to Rustenberg in the old Transvaal (Fig. 2). There is a published photograph of one, labeled Long-billed Pipit, from Ais Ais in southwestern Namibia (Ginn *et al.* 1989, p.582). In addition, R.L. photographed one in the Kalahari National Park in May 1990 (photograph in R. Liversidge collection).

Status

Where it occurs, the Kimberley Pipit is fairly common. It appears to be sedentary but variations in numbers at particular sites, and variations in the plumage of individuals present at different times, suggest some winter movements from May to August.

Etymology

The vernacular name Kimberley Pipit is given because the types were identified from Kimberley. The specific name *pseudosimilis* was given because the first specimen identified by DNA had been misidentified as *similis*, from which it is difficult to differentiate morphologically.

TABLE 1
List of known specimens of *Anthus pseudosimilis*

Specimen number	Date collected	Locality collected	Latitude & longitude	Where deposited
MBM/5734	9.08.98	Benfontein	28°45'S 24°49'E	Barrick Mus., Univ. Nevada, Las Vegas
MBM/5735	9.08.98	Kimberley	28°45'S 24°47'E	"
MBM/5736	9.08.98	Kimberley	28°45'S 24°47'E	"
MBM/5738	9.08.98	Kimberley	28°45'S 24°47'E	"
BNM/00668	17.12.86	Warden OFS	27°49'S 28°58'E	National Mus., Bloemfontein
BNM/01454	27.08.97	Springfontein	30°17'S 26°44'E	"
BNM/01664	28.08.97	Springfontein	30°17'S 26°44'E	"
BNM/02245	24.09.96	Philipstown	30°16'S 25°17'E	"
BNM/03787	13.06.91	Trompsberg	30°03'S 25°07'E	"
BNM/05041	24.10.96	Middelburg	31°30'S 25°17'E	"
1905.12.20.34	20.12.05	Rustenberg	25°04'S 27°15'E	Nat.Hist. Mus., Tring
1905.12.29.1515	29.12.05	Klipfontein	29°13'S 17°40'E	"
1903.3.9.509	9.03.03	Deelfontein	30°59'S 23°48'E	"
1903.3.9.512	9.03.03	Deelfontein	30°59'S 23°48'E	"
1965.M.9004	1965	Middelburg	31°30'S 25°17'E	"
2002.1.1	9.08.98	Kimberley	28°45'S 24°47'E	"
MMK/2458	13.09.95	Kimberley	28°45'S 24°47'E	McGregor.Mus

Comparison with other species

In most of the Kimberley Pipit's known range, it is most likely to be confused with the Long-billed Pipit and it is therefore with this species that we make most comparisons below. Although genetically most closely related to the Malindi Pipit (Voelker 1999a) the Kimberley Pipit is easily separated by its larger size, less well-streaked chest, lack of streaks on flanks, and by the colour of the base of the bill, which is horn to yellowish, rather than bright yellow as found in *A. melindae*.

Plumage

Fig. 1 illustrates the five larger streaked-backed pipit species that occur in Africa south of the equator. Although not well shown in the illustration, the crown of the Kimberley Pipit often gives the impression of being neatly marked by its streaked pattern and this appears to be darker brown than the back (Fig. 3). The back feathers have darker centres and broad pale margins and these often form five or six lines down the back (Fig. 3).

Females are generally less distinctly marked, but overlap in plumage detail between male and female renders it difficult to sex individuals in the field with any confidence

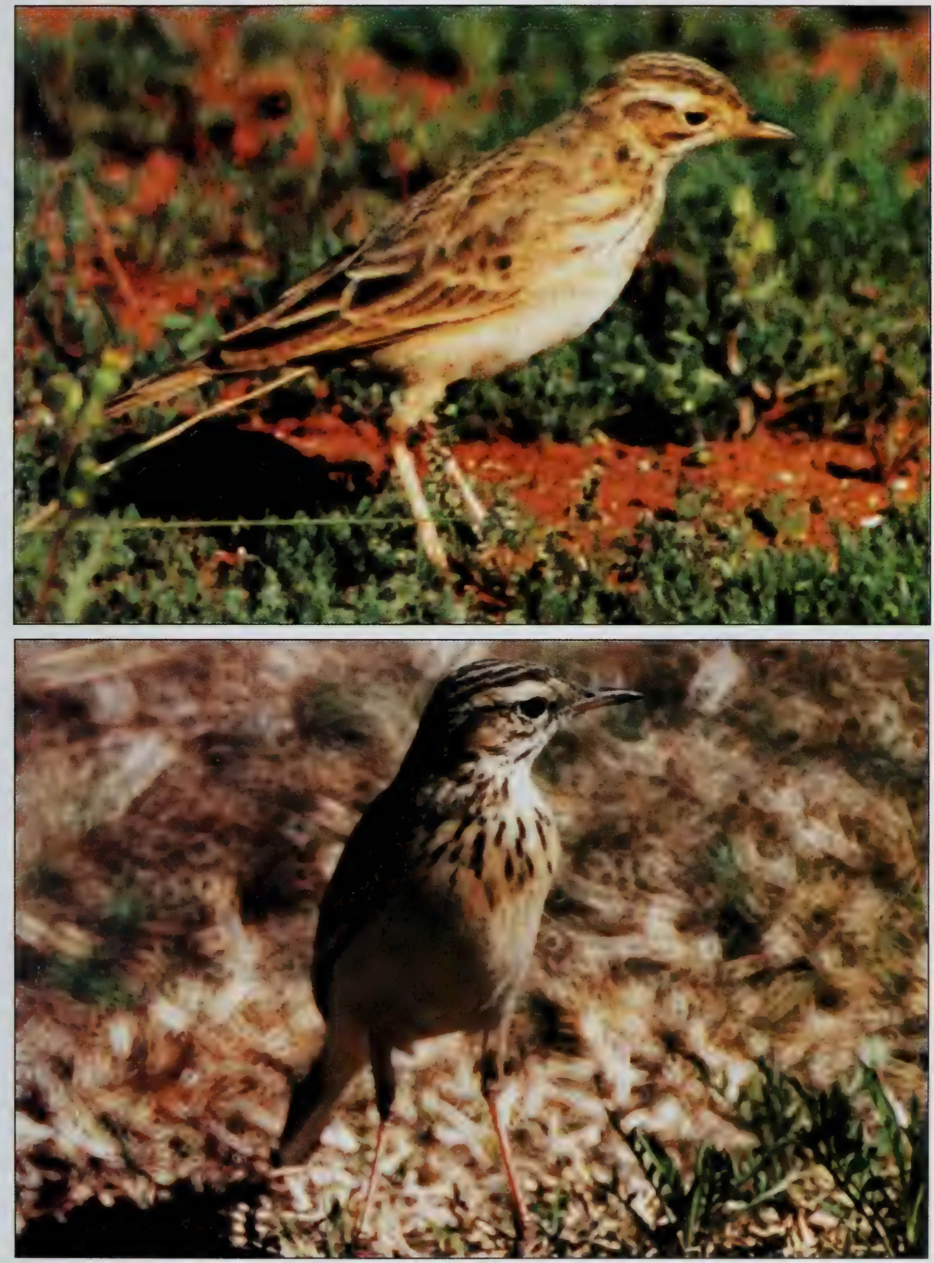


Figure 3. Photographs of two Kimberley Pipits showing the various characteristics mentioned in the text. Note the distinctly streaked crown, broad pale margins to otherwise dark back feathers, lightly streaked breast, unstreaked flanks, and underparts generally paler than upperparts.

Both sexes of *A. pseudosimilis* have a distinct pale creamy-coloured stripe above the eye from the base of the bill to the back of the ear-coverts (Fig. 3). *A. similis* has a much less conspicuous eye-stripe in the Kimberley region. *A. pseudosimilis* has a distinct buff to rufous patch on side of face below the pale eye-stripe, covering the ear-coverts and extending down to the moustachial stripe (Fig. 3). This is more apparent on live birds than on study skins and is a good field characteristic. The rear of this rufous patch appears square-ended or merges with the side of the neck. There is frequently a distinct paler creamy line that curves upwards, a short distance below and posterior to the ear-coverts (Fig. 3). In breeding pairs, females have paler rufous ear coverts than males.

The *A. pseudosimilis* specimens have a distinct black malar stripe and this is noticeable in the field, where the male bird usually has a darker malar stripe than the female. Nine of ten *A.similis* specimens in the BMNH collection had no malar stripe, while the tenth had a less distinct one. One *A. similis* specimen (BMNH 1903.3.9.511) from Deelfontein had a malar stripe on its left side and nothing on the right side

The underparts are usually paler than the back. The chin is pale and unmarked; the chest usually has markings, sometimes forming a darker chest band, but is rarely heavily streaked; belly and flanks are pale and unmarked. First plumage birds and breeding males have distinct heavier markings on the chest. In contrast, the underparts of the Long-billed Pipits that occur in the Kimberley region are generally uniform and not paler than the back.

The pale areas of the outer-tail feathers vary in colour from buff to white in both *A. pseudosimils* and *A. similis,* and in many other pipits, so that this is not a reliable species characteristic (but in *A. cinnamomeus* they are always white). There is also substantial variation in the pattern of the pale outer rectrix marking in *A. pseudosimilis* (Fig. 4), but rarely is the extent of pale marking as great as in *A. similis*, and this difference is apparent in the field when birds take off with the tail fanned.

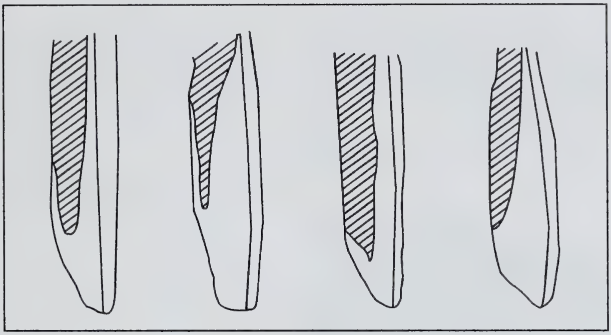
Bare parts and morphometrics

The base of bill and legs of *A. pseudosimilis* are straw to flesh-coloured, as in *A.similis.* The gape of the Kimberley Pipit is conspicuously yellow inside, sometimes orange-yellow, when open and feeding. In *A. similis* the gape is flesh-coloured and inconspicuous. The culmen of male *A. pseudosimilis* is significantly shorter than that

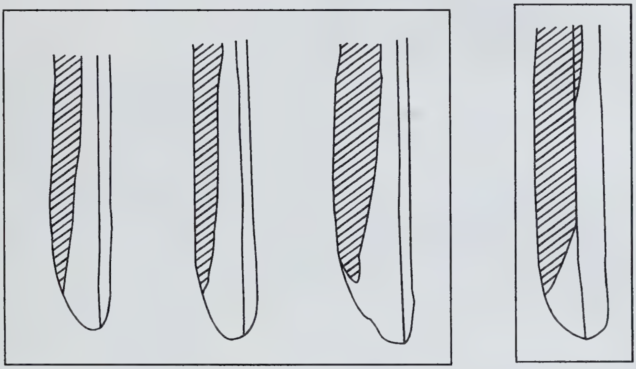
TABLE 2.

The of biometrics of five male *Anthus pseudosimilis* and four male *A. similis* (insufficient females were available for comparison). Data are mean ± 1 standard deviation (range).

Measurement	*A. pseudosimilis*	*A. similis*	t-test
Culmen	14.36 ± 0.25 (14.2-14.8)	15.20 ± 0.16 (15.0-15.4)	$t_7 = 5.75$, $P = 0.001$
Hind claw	12.20 ± 0.75 (11.1-13.2)	9.30 ± 0.48 (9.0-10.0)	$t_7 = 6.69$, $P < 0.001$
Tarsus	27.34 ± 2.09 (26.0-31.0)	28.58 ± 2.59 (26.0-32.0)	$t_7 = 0.79$, NS
Wing	97.20 ± 2.59 (93.0-100.0)	95.50 ± 7.19 (86.0-102.0)	$t_7 = 0.50$, NS
Mass	31.56 ± 2.88 (28.0-35.2)	30.45 ± 1.04 (29.8-32.0)	$t_7 = 0.73$, NS



pseudo similis



nyassa **similis**

Figure 4. Diagrammatic illustration of the variation found in the pattern of the outer tail feathers of the Kimberley Pipit, compared with those of the Long-billed Pipit and the northern Wood Pipit.

of the Southern African forms of *A. similis* (Table 2). The name "Long-billed" Pipit applies to the nominate subspecies from India and is a misnomer for African birds, in which the bill is shorter and similar to that of other African species.

The 5th primary (P5) is noticeably shorter than P6 and this is a reliable diagnostic feature with *A. pseudosimilis* in the hand. In all *A. similis* specimens in the collection at the Natural History Museum, Tring, except one from Sudan, P5 and P6 are similar in length.

The tertiaries of *A. pseudosimilis* extend to P4/P5, whereas in *A.similis* they extend to only P5/P6. In *A. pseudosimilis* P8, P7 and P6 have emarginated outer webs (Fig. 5), while in *A. similis* four primaries, P8, P7, P6 and P5, are emarginated (Keith *et al.* 1992, Clancey 1990).

The hind claw of male *A. pseudosimilis* is significantly longer than in male *A.similis* (Table 2).

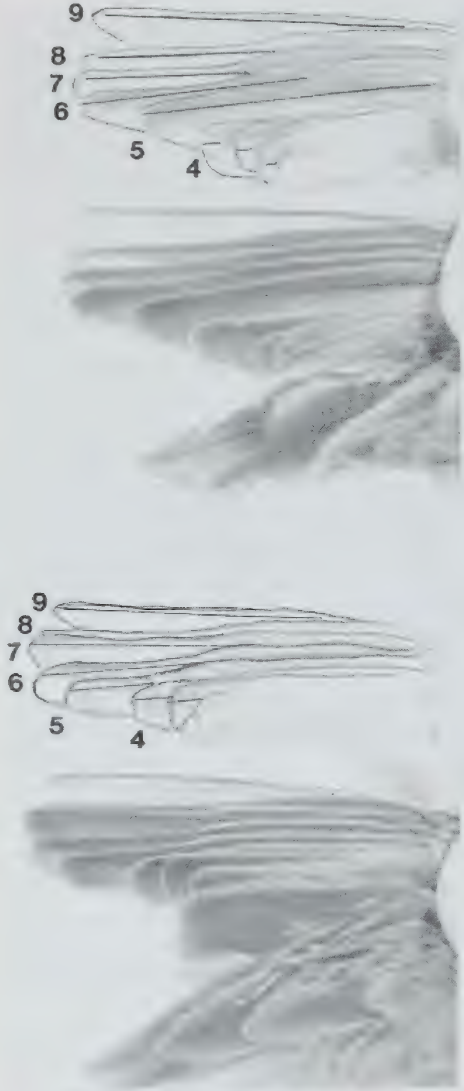


Figure 5. Open wings of a Kimberley Pipit (NMB 05041, above) and Long-billed Pipit (NMB 03429, below), with drawings of these to show the differences in wing formula and primary emargination described in the text.

Kimberley Pipits and Long-billed Pipits do not differ in wing length, tarsus length or body mass (Table 2) but in the field the former appear longer–legged and smaller, as does the Malindi pipit (Keith *et al.* 1992).

Habitat

The Kimberley and Long-billed Pipits occupy different habitats, the former occurring on plains and grassveld and the latter on boulder-strewn hillsides with trees. The

Wood Pipit *A. nyassae*, which on present knowledge is also allopatric with both Kimberley and Long-billed Pipits, occurs in open savanna with tall grasses and trees. The commonest and most widespread pipit in southern Africa is the smaller African Pipit *A. cinnamomeus* which prefers shorter open grasslands devoid of trees and often near water or other moist areas. The Mountain Pipit *A. hoeschii* occurs in the Kimberley area as a rare passage migrant on calcrete with short grasses *(Sporobolus)* and karooid short hardy shrubs.

Behaviour

Pipits feed on the ground with short runs followed by a stop, when they may peck at food and/or move their tails. The Kimberley Pipit usually crouches when pecking. Both the number of paces taken between stops and the manner the tail is moved by each species of pipit can vary in a characteristic manner.

The number of steps taken by birds between stops and the number of tail flicks made were quantified using a digital video camera that could be slowed down 30 times. The footage obtained covered 209 seconds for *A. pseudosimils*, relating to 21 separate observation periods of at least three individuals, and 300 seconds for *A. similis*, involving nine separate observation periods of one individual. The Kimberley Pipit takes more steps between stops than the Long-billed Pipit (Median 5.00, range 1-16, for Kimberley Pipit, n of stops = 119; median 3.00, range 1-9, for Long-billed Pipit, n = 65, Mann-Whitney W = 13027, $P < 0.001$). During these observation periods, Kimberley Pipits made 68 tails flicks while Long-billed Pipits made 6 ($\chi_1^2 = 66.9$, $P < 0.001$), indicating that the former flick their tails much more frequently when moving.

Kimberley Pipits are usually seen on the ground, less often perched on a tuft of grass. When alarmed they may perch on fences or telephone wires but have not been seen to perch on bushes or trees. By contrast, Long-billed Pipits are rarely seen on the ground except when feeding; they normally perch in prominent positions on thin branches on tops of trees or bushes, or on boulders. During feeding bouts on the ground they often hop onto rocks to look around. When disturbed from the ground, Wood Pipits fly up into a tree and settle on an exposed thick branch, often running along it. Unlike Long-billed Pipits, Wood Pipits utilise branches that confer good all-round vision, without themselves being conspicuous.

Horizontal flight of *A. pseudosimilis* and *A. similis* is undulating but not exaggerated. However, the dips of *A.similis* appear to be slightly greater, possibly because its tail is slightly longer and held more widely fanned. In courtship or territorial flight the Kimberley Pipit rises with a fluttering flight to 20 - 30 m, sometimes > 50 m, and then, during descending loops *c.* 70° off the horizontal, it calls in each loop with both head and tail held above the horizontal. This is similar in description to the song flight of the Olive-backed Pipit *A. hodgsoni* (Cramp 1988). In contrast, the Long-billed Pipit calls mainly from a tree or boulder but may take off from such a perch with a fluttering flight, ascending a short distance and calling at the same time (R.L. pers.obs).

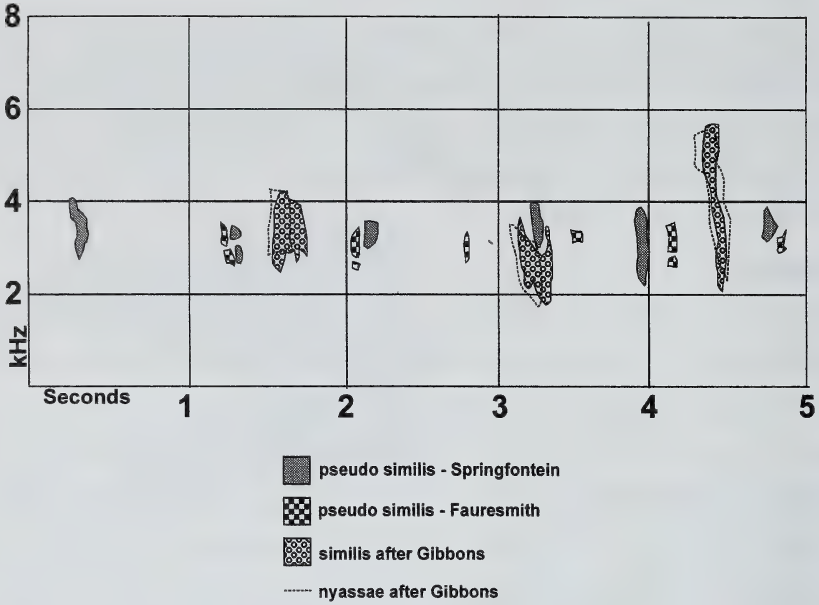


Figure 6. Diagrammatic representation of sonograms of the songs of the Kimberley and Long-billed Pipits, together with the song of the Wood Pipit, superimposed upon each other. Despite the similarity of the songs, the descending notes of the Kimberley Pipit are discernible and contrast with the more similar notes of the Long-billed Pipit.

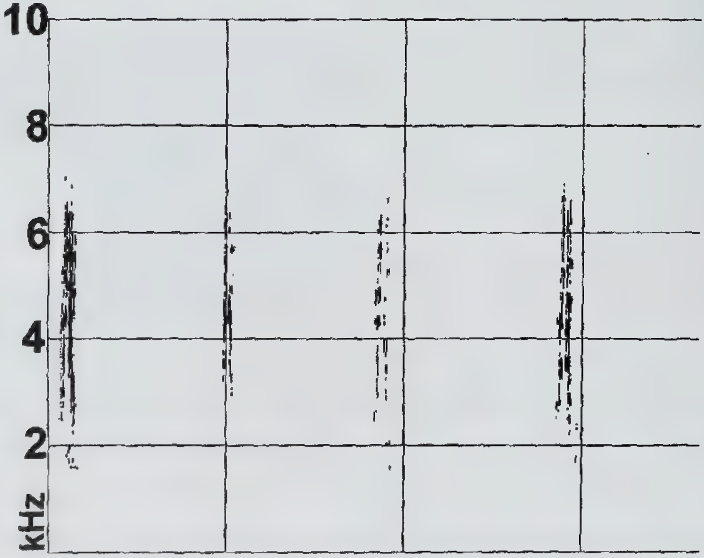


Figure 7. Sonograms of the flight calls of three individual Kimberley Pipits.

Vocalization

The song of *A. pseudosimilis* is usually given in flight and consists of three deepish notes "chreep-choop-chreep", in a descending series (Fig. 6), often repeated during courtship. The song of *A. similis* usually consists of three notes, rarely two, of similar timbre but is most often uttered from a perch in a tree or on a boulder, and the three notes are always at the same pitch. Flight calls (Fig. 7) are usually single but two or three notes may be produced; on rare occasions both species may give three notes in horizontal flight when disturbed.

Nest and eggs

Most pipits conceal their nests in depressions on the ground or at the base of some shelter such as a tuft of grass or a rock. Of the two Kimberley Pipit nests so far discovered, one had a roundish *c.* 15 cm tunnel entrance through grass to the nest cup in a low grass-tuft. The second nest was very well concealed at grass roots level, deeply hidden under overhanging leaves and not visible from above. Only two other pipit species appear to have such well covered nests: Nilgiri Pipit *Anthus nilghiriensis* from India which "conceals its nest on some bank well concealed by grass " (Ali & Ripley 1973), and Yellowish Pipit *A. lutescens* from South America, which also has a short tunnel entrance to a nest concealed in a large, isolated grass tuft in pasture (GV

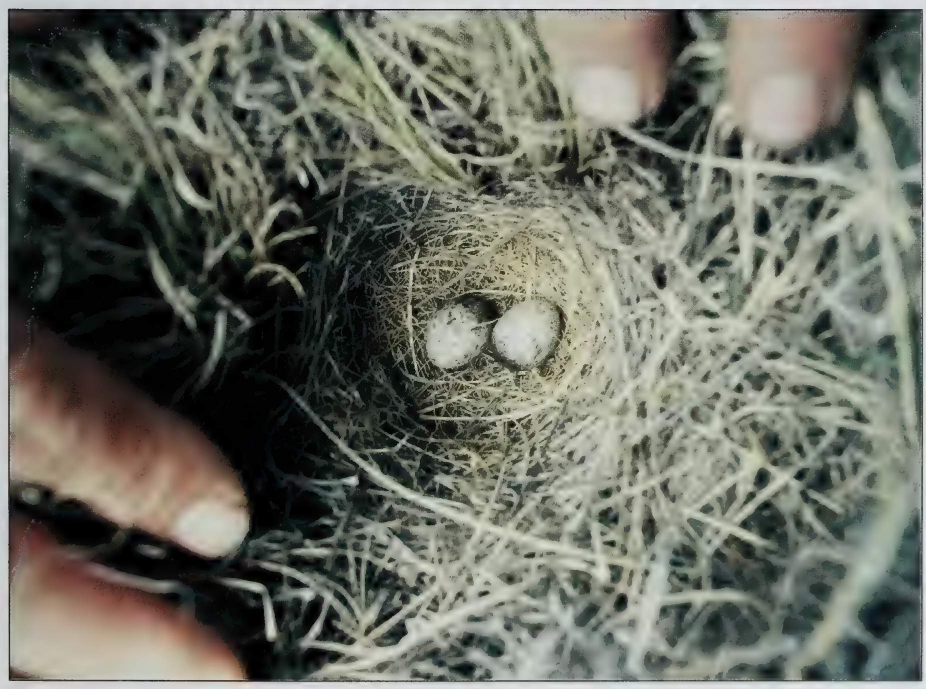


Figure 8. Nest and eggs of the Kimberley Pipit. Covering grass was held back to allow photography. Note that the bluish background colour of the eggs, described in the text, is not clear from this photograph.

pers. obs.). The Long-billed Pipit usually nests "on a slope and situated against the underside of a sloping rock", whilst the Wood Pipit sites its nest "into a shallow scrape or hollow against the side of a grass tuft" (Tarboton 2001).

The eggs of the Kimberley Pipit have a pale bluish-white background with neat dark blobs all over (Fig. 8). In contrast the eggs of the Long-billed Pipit are densely marked by fine lines forming a greyish background (well illustrated in Priest 1948). All southern African Long-billed Pipits eggs that have been examined are similar. The two Kimberley Pipit eggs were more rounded, less pointed at the small end than those of *A.similis* and appeared smaller. The eggs of the Wood Pipit are described (Maj.J.F.R. Colbrook-Robjent, pers.comm.) as very similar to those in the photograph of the Kimberley Pipit nest.

Nestling Kimberley Pipits are much darker brown than adults, with the back feathers showing a fine light cream margin giving a scaly appearance. The fledgling Long-billed Pipit has a broader buff-brown edge to its dorsal feathers (de Swardt 2001). The face, chin and chest do not show the darker head markings that characterize the fledgling Plain-backed Pipit *Anthus leucophrys* or the Buffy Pipit *A. vaalensis*.

Discussion

The taxonomy of the Afrotropical pipits remains confused despite two recent taxonomic reviews (Clancey 1990, Keith *et al.* 1992) and subsequent examination of the DNA profiles of all but three of the species currently recognised (Voelker 1999b). The confusion stems from mis-identification of specimens, different techniques of describing wing formulae, different applications of species limits, and the recent recognition of new taxa. Furthermore, genetic studies have shown that morphological similarity does not necessarily imply relatedness. For example, we now know that there is no foundation for Hall & Moreau's (1970) "super-species" that brought all the larger plain-backed pipits together. Adaptation to sometimes subtly different habitats seems to have led to convergent evolution of morphological characteristics. This is also exemplified by the demonstration here that two morphologically very similar forms, *A. pseudosimilis* and *A. similis*, are not closely related and comprise two species of which the former is new to science.

Following the demonstration, through genetic studies (Voelker 1999a), that two species are involved, we have sought morphological, behavioural and ecological features that permit the separation of these two taxa in the hand and in the field. Through comparisons of the six specimens that comprise the type series, and known from their DNA profiles to represent the new species, with specimens of *A. similis* we conclude that wing formulae and emargination and culmen and hind claw length are reliable characteristics for the separation of the two taxa. They are also separated by habitat preferences, nest site characteristics and possibly egg colour and pattern, although examination of more clutches of *A. pseudosimils* is needed to ascertain variability within this species. There are also differences in behaviour, with Kimberley Pipits taking more steps between stops, and making more frequent tails flicks, than Long-billed Pipits.

Taxonomic considerations

Voelker (1999a) suggested that, based on DNA analysis, the holotype of *A. pseudosimilis* was most closely related to *A. melindae*. Subsequent analysis of 590 bp of cytochrome b, from all other *pseudosimilis* specimens detailed in this paper, provided a confused picture of relationships, in that two *pseudosimilis* (GAV 1089, GAV 1100) appear to share the mtDNA of *Anthus leucophrys*, while the remaining three specimens share the mtDNA of *A. cinnamomeus.* Sequence divergence between the two groups of hybrids is 5-6%, suggesting that divergence occurred roughly 2.5 million years BP. This evidence of shared mtDNA among three species of pipits implies that hybridisation among southern African pipits is, or has been in the past, quite common. This is not particularly surprising, nor does it mean that *pseudosimilis* is not a valid species; hybridization often occurs between avian species (Grant & Grant 1990), and as such is not an obstacle to recognizing valid taxa (Zink & McKitrick 1995). Indeed, recent studies have shown that females of one species can actually prefer and mate with males of another species (e.g., Rohwer & Wood 1998; Pearson & Rohwer 1998; Pearson & Manuwal 2000, Thor Veen *et al.* 2001, Hasselquist 2001). Thus, hybridization and/or clear genetic evidence of monophyly is not necessarily a barrier to recognising valid species; note also that a lack of genetic evidence for monophyly has not precluded the recent recognition of avian species (e.g., Eames & Eames 2001, Johnson & Jones 2001).

Our contention then is that *pseudosimilis* is best recognized as sister to *melindae*, and that the probable past hybridization does not invalidate *pseudosimilis*, for the following reasons. First, the morphological and behavioural differences described above clearly support the identification of a new pipit species; the nest architecture alone clearly sets this taxon apart from all other African *Anthus* taxa. Second, although we found hybridisation between *pseudosimilis* and *cinnamomeus*, the hybrids are clearly different from any recognized race of *cinnamomeus* based on a number of morphological and behavioural characters (Clancey 1990, Keith *et al.* 1992). Third, although we found hybridization between *pseudosimilis* and *leucophrys*, the well-defined streaks both on the breast and back of *pseudosimilis* clearly show that the genetic hybrids are not conspecific with *leucophrys*, which has no streaking in either body region

We feel confident of our designation of *Anthus pseudosimilis* as a new species which is quite distinct from any other pipit. It has been separated from its apparent nearest relative, *Anthus melindae* (from coastal Kenya) on the basis of DNA comparisons, for about 2.5 million years (Voelker 1999a). This type of sister-distribution (assuming a more southerly distribution for *pseudosimilis*) is part of a larger pattern within *Anthus* (Voelker 1999b). Indeed the 86 bird species listed by Moreau (1966) that indicate the ancient link of the arid-corridor from the north east horn of Africa to the Kalahari probably provides the strongest supporting evidence of such separations.

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Eleven new sub-species of babbler (Passeriformes: Timaliinae) from Kon Tum Province, Vietnam

by Jonathan C. Eames

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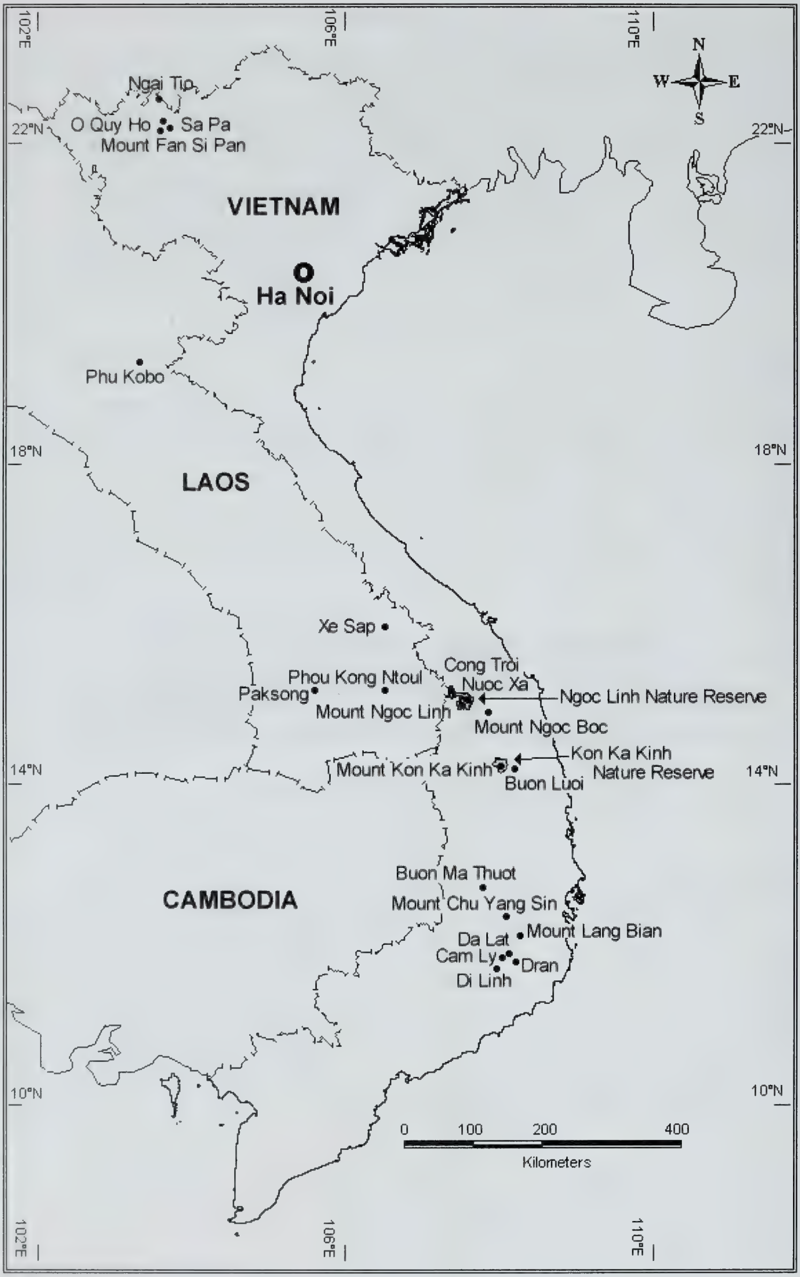
The BirdLife International Vietnam Programme, in collaboration with the Forest Inventory and Planning Institute (FIPI), recently completed a project to identify and incorporate terrestrial forest sites of international importance for biodiversity conservation within a revised system of protected areas. During spring 1996, 1998 and 1999, BirdLife and FIPI teams undertook preliminary ornithological exploration of hitherto unexplored high mountains in the Central Highlands of southern Vietnam, as part of management planning activities for the establishment of three new nature reserves, in Kon Tum, Gia Lai and Quang Nam Provinces (Fig. 1) (Le Trong Trai *et al.* 1999, Le Trong Trai *et al.* 2000, Tordoff *et al.* 2000). In 1996 and 1998, BirdLife and FIPI field activities were focused on the southerly aspect of Mt Ngoc Linh in northern Kon Tum Province. Rising to 2,598 m asl, Mt Ngoc Linh (15° 04'N, 107° 59'E) is the dominant landscape feature and the highest peak in the Central Highlands. In spring 1999, a BirdLife/FIPI team investigated Mt Kon Ka Kinh (14° 19'N,108° 24'E), 1,748 m asl, one of the highest peaks in the massif and 95 km SE of Mt Ngoc Linh. Also in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O Quy Ho
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Mount Fan Si Pan
VIETNAM
Ha Noi
Phu Kobo
LAOS
Xe Sap
Cong Troi
Nuoc Xa
Phou Kong Ntoul
Paksong
Mount Ngoc Linh
Ngoc Linh Nature Reserve
Mount Ngoc Boc
Kon Ka Kinh Nature Reserve
Mount Kon Ka Kinh
Buon Luoi
CAMBODIA
Buon Ma Thuot
Mount Chu Yang Sin
Mount Lang Bian
Da Lat
Cam Ly
Dran
Di Linh
0
100
200
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Figure 1. Localities mentioned in the text.

spring 1999, a survey team visited the northern slopes of Mt Ngoc Linh in Quang Nam Province with a view to researching a feasibility study for a nature reserve, which would be contiguous with the protected area in adjacent Kon Tum Province. In addition to BirdLife and FIPI staff, this survey team also included ornithologists from the Department of Ornithology at the American Museum of Natural History (AMNH) and colleagues from the Institute for Ecology and Biological Resources (IEBR) in Hanoi.

From the geographical isolation of these mountains, their height and lack of earlier exploration, we expected to make interesting ornithological findings. On Mt Ngoc Linh in Kon Tum Province it was immediately apparent that the area supported several undescribed taxa of babbler (Passeriformes: Timaliinae). This was not so on Mt Kon Ka Kinh, but at both localities we attempted to collect a representative sample of Timaliinae and other bird specimens we believed would most likely prove to be undescribed forms. A paper detailing these collections, including the major collection made by ornithologists from the AMNH, will be published at a later date. Arising from the BirdLife/FIPI work on Mt Ngoc Linh, my colleagues and I previously described two new species of Timaliinae, the Black-crowned Barwing *Actinodura sodangorum*, and Golden-winged Laughingthursh *Garrulax ngoclinhensis* (Eames *et al.* 1999a; Eames *et al.* 1999b). A third new species, the Chestnut-eared Laughingthrush *Garrulax konkakinhensis,* was described from Mt Kon Ka Kinh (Eames & Eames 2001). Specimens collected from Mt Ngoc Linh, the nearby Cong Troi (15° 14'N, 107° 41'E), and Mt Kon Ka Kinh by Le Trong Trai (LTT), Nguyen Cu (NC) and myself (JCE), I diagnosed during visits to the bird skin collections at the Natural History Museum, Tring (BMNH), between 1996 and 2001, the AMNH in 1999 and 2001, The United States National Museum (USNM) in 2001, the Thailand Institute of Scientific and Technological Research (TISTR), Bangkok and the National Science Museum (NSMT), Patumthani, Bangkok, Thailand in 1999. I here describe 11 new subspecies of Timaliinae.

Etymology

In this paper I have elected to choose commemorative sub-species names. My principle motivation in doing so has been to honour ornithological friends and colleagues either from, or active in, Vietnam, or from amongst those who have made recent and substantial contributions to the ornithology of the Indochinese subregion. In doing so I have followed a number of self-imposed guidelines. In the case of Vietnamese and Thai names, I have chosen subspecific names based on the persons' given name, whereas, I have chosen patronyms when the name is based on an English or Russian surname. In Vietnamese and Thai it is the given name (rather than the family name) that is used (together with the appropriate pronoun) when addressing an individual. The fact that in Thai the given name is written preceding the family name (as in English and Russian), whilst in Vietnamese it follows the family name, is therefore irrelevant in this context. Using only the Vietnamese given name avoids the confusion that would arise if the family name were used, since in Vietnamese these are relatively few and some (i.e. Nguyen) are predominant. Using only the Thai given name avoids using often very long multi-syllable family names that are common in Thailand. This additionally, and most importantly, reduces the opportunities for the subsequent future misspelling of these new subspecific names.

In each case the subspecific names have been constructed as nouns in the Latin genitive (possessive) case. Since names based on surnames (family names) are considered masculine, where relevant, the subspecific epithet for English and Russian names has been created by the addition of merely "i". I have applied this to create the subspecies names derived from the Thai and Vietnamese male given names. In two instances this results in the epithet ending in "ii". In one instance below the subspecific name is based on a woman's given name that ends in an "a". I have elected to drop one "a" so that the name may be rendered more easily.

Subspecies accounts

In terms of their presentation, the subspecific accounts follow widely accepted conventions. Each account contains a brief introduction introducing the new taxon, in which a summary of the comparitive material examined is mentioned. This is followed by a brief description and diagnosis of the holotype, and paratypes where relevant. The soft-part colourations are given as noted in the field, at or soon after death and measurements are given for maxilla, wing (flatened chord), tarsus (from ankle joint to last complete scutum before the phalanges) and tail (from the tip of pygostyle to the end of longest rectrix). Detailed plumage descriptions are omitted (principally for reasons of space). The initials of the collectors and preparators concerned are given. Very brief notes on ecology and behaviour, habitat, distribution and etymology then follow. The last section presents specimen data for all specimens examined, in the form: trinomial scientific name, institution where examined, (abbreviated as above, no prefix is used for specimens retained at the BirdLife International Vietnam Programme office in Hanoi), registration number as on the specimen label, status as holotype, paratype or topotype in parentheses if relevant, date of collection, sex, if known, and collecting locality, as per the label. If omitted on the label the country of collection has been added in the text. Where precise dates of collection are unknown, month and year, or sometimes only year, are given. The species order follows Inskipp *et al.* (1996).

BLACK-HOODED LAUGHINGTHRUSH *Garrulax milleti*

A series of four, comprising two collected from Cong Troi, and one each from Mt Ngoc Linh and Mt Kon Ka Kinh, were compared with 19 specimens including the holotype, three paratypes and four topotypes of the nominate form (Robinson & Kloss 1919). The specimens from Cong Troi, Mt Ngoc Linh and Mt Kon Ka Kinh are sufficiently distinct to be named as:

Garrulax milleti sweeti, subsp. nov.

Holotype. BMNH registration number 1998.71.5, adult female collected at Cong Troi (15° 14'N, 107° 41'E), Kon Tum Province, Vietnam, *c.* 1,500 m asl, 23 April 1998. Collected by LTT and prepared as a standard museum skin by JCE (Figs. 2 and 3)

Paratypes. Registration number 2001.8.1, adult male also collected at Cong Troi (15° 14'N, 107° 41'E), Kon Tum Province, Vietnam, *c.* 1,500 m asl, 13 April 1998, and registration number 2001.8.2, adult male collected on Mt Kon Ka Kinh, Gia Lai Province, Vietnam, 1,400 m asl, 26 March 1999. Both specimens were collected and prepared as standard museum skins by JCE and are retained at the BirdLife office in Hanoi. AMNH 833160, adult male (testis 12x8 mm), light fat, collected 11 km south-west of Nuoc Xa, Mt Ngoc Linh, Quang Nam Province, Vietnam at 920 m asl on 15/03/99. AMNH 833161, adult female collected 11 km south-west of Nuoc Xa, Mt Ngoc Linh, Quang Nam Province, Vietnam, 920 m asl, 21 March 1999. Both specimens were collected and prepared as a standard museum skin by Paul Sweet (PRS). AMNH 833161 is currently deposited at IEBR in Hanoi.

Diagnosis. Very similar to the nominate form but lacks brown tones in plumage. The head and upper breast is black, rather than blackish-brown. The narrow white breast-band is pure white rather than off-white and the entire underparts are cold grey. The mantle, back, rump and wing coverts are olive-grey rather than grey-brown as in the nominate form. The remiges and rectrices are blacker and lack the brown tones found in the nominate race (Figs 2 and 3). Reference was recently made to the diagnostic features of this subspecies in Robson (2000).

Measurements (mm) and bare-part colouration. Holotype*.** Maxilla 36; tarsus 48; wing 132; tail 115; iris brown; legs blackish-brown; bill black. ***Paratypes. 2001.8.1 Maxilla 9.5; tarsus 42.5; wing 135; tail 129; iris dark brown; legs black-horn; bill black. 2001.8.2 Maxilla 31; tarsus 48; wing 129; tail 121; iris dark brown; legs grey-horn; bill black-horn. AMNH 833160 Maxilla 30; tarsus 45.5; wing 133; tail 120.5; iris reddish brown; legs bluish-grey, soles yellow; bill charcoal grey.

Ecology and behaviour. At Cong Troi and Mt Kon Ka Kinh this taxon was typically observed in large noisy flocks moving through the forest lower storey. This is a wary species which when disturbed generally retreats up into the forest canopy and then approaches the observer from this vantage point of comparative safety. At Cong Troi on 13 April 1999, I observed a flock of Black-hooded Laughingthrushes associating together with a flock of Red-tailed Laughingthrushes *Garrulax milnei.*

Habitat. At Cong Troi, Mt Ngoc Linh and on Mt Kon Ka Kinh this taxon was typically found in lower montane evergreen forest. This is a forest laughingthush and I have never once seen it in scrub, bamboo or secondary growth at forest edge.

Distribution. This species was previously considered to be endemic to the Da Lat Plateau Endemic Bird Area (EBA) (Stattersfield *et al.* 1998). However, two specimens of this species were previously collected on 12 July 1984 and 21 April 1986 at Buon Luoi, Gia Lai Province. Measurements are: Maxilla 29, 28; tarsus 49, 50; wing 132, 134; tail 118, 117 (Stepanyan 1995). These specimens are deposited in either Moscow or St

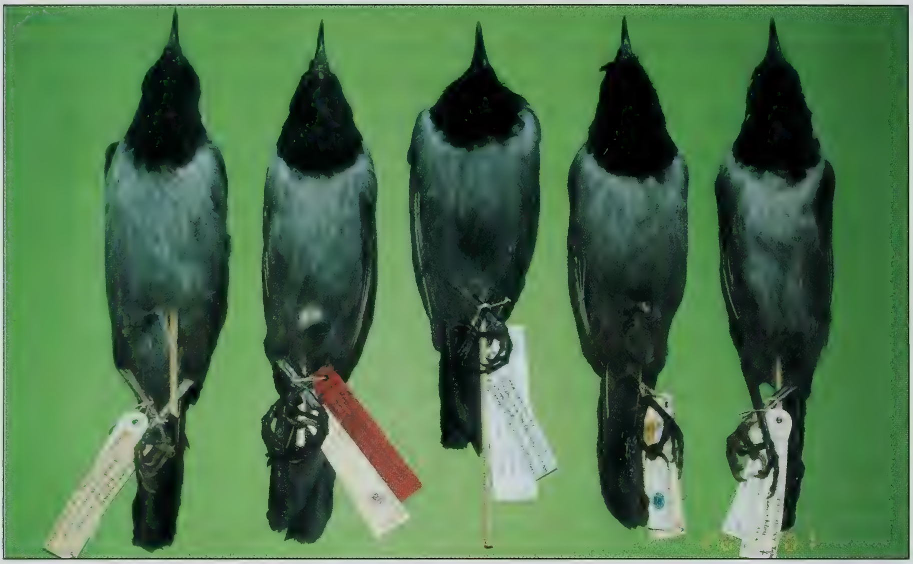

Figure 2. Ventral view of the holotype of *Garrulax milleti sweeti* (centre) together with four specimens of *G. m. milleti* (from left to right); BMNH 1919.12.20.268 (Paratype), BMNH 1919.12.20.266 (Holotype), BMNH 1919.12.20.527 (Topotype), and BMNH 1919.12.20.267 (Topotype) (photograph by J.C. Eames).

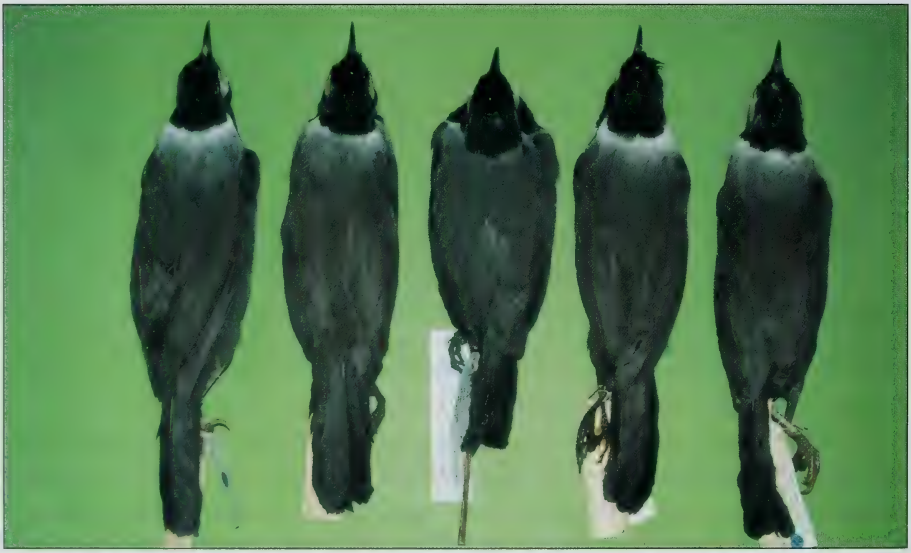

Figure 3. Dorsal view of the holotype of *Garrulax milleti sweeti* (centre) together with four specimens of *G. m. milleti* (from left to right); BMNH 1919.12.20.268 (Paratype), BMNH 1919.12.20.266 (Holotype), BMNH 1919.12.20.527 (Topotype), and BMNH 1919.12.20.267 (Topotype) (photograph by J.C. Eames).

Petersburg and have not been subspecifically diagnosed. However, since Buon Luoi (14° 15' N, 108° 37' E) is located only 20 km from Mt Kon Ka Kinh, the Stepanyan specimens are very likely to be *G. m. sweeti*. The discovery of the species at Cong Troi in northern Kon Tum Province and on Mt Ngoc Linh in northern Quang Nam Province represents a significant northward range extension. There are additionally recent sightings of the species at Xe Sap in southern Laos and the species can no longer be considered a true Vietnamese endemic (Thewlis *et al*. 1998). However, without specimens it is not possible to know to which form the Laos birds should be assigned, or indeed whether they may represent another, as yet undescribed form. This species, and very likely *G. m. sweeti*, was recently observed at various localities about Mt Ngoc Boc in southern Kon Tum Province which is located between Mt Ngoc Linh and Mt Kon Ka Kinh (Eames *et al*. 2001).

On the basis of our current knowledge these two forms occupy disjunct ranges that are separated by unsuitable (lowland) habitat in northern Dak Lak and southern Gia Lai Provinces. They are therefore unlikely to meet and intergrade. No specimens have yet been collected from Mt Chu Yang Sin in southern Dak Lak Province within the Da Lat Plateau EBA, from where there are recent sight records (Eames 1995, Hill *et al*. 2001). Birds from Mt Chu Yang Sin, on the basis of range, should prove to be the nominate form.

Etymology. This subspecies is named in honour of Paul Sweet, Collections Manager at the Department of Ornithology at the AMNH.

Specimens examined. *G. m. milleti*: BMNH 1919.12.20.266 (Holotype) 04 April 1918, Male, Da Lat, Vietnam; BMNH 1919.92.20.527, 11 May 1918, Male, Dran, Vietnam; BMNH 1919.12.20.287 (Topotype), 02 May 1918, Female, Da Lat, Vietnam; BMNH 1919.12.20.268 (Topotype), 01 May 1918, Male, Da Lat, Vietnam; BMNH 1927.6.5.948, 10 March 1927, Male, Di Linh, Vietnam; BMNH 1927.6.5.951, 09 March 1927, Male, Di Linh, Vietnam; BMNH 1927.6.5.950, 10 March 1927, Female, Di Linh, Vietnam; BMNH 1927.6.5.949, 02 March 1927, Female, Di Linh, Vietnam; BMNH 1927.6.5.952, 04 March 1927, Male, Di Linh, Vietnam; AMNH 587174 (Topotype), 01 May 1918 Male, Da Lat, Vietnam; AMNH 587175 (Topotype), 01 May 1918, Female, Da Lat, Vietnam; AM587176, 09 March 1927, Female, Di Linh, Vietnam; USNM 278399 (Paratype), 07 April 1918, Male, Da Lat, Vietnam; USNM 278398 (Paratype), 07 April 1918, Male, Da Lat, Vietnam; USNM 278400 (Paratype), 11 May 1918, Male, Da Lat, Vietnam; USNM 360882, February 1940, Male, "along road to Ban Me Thuot 60 km, from Saigon road 36 km," Vietnam; USNM 359051, July 1939, Female, Forests of Cam Ly, Vietnam; USNM 359050, July 1939, Female, Forests of Cam Ly, Vietnam; USNM 359052, July 1939, Female, Forests of Cam Ly, Vietnam. Also examined were two specimens of the very closely related *G. strepitans ferrarius* as follows: USNM 324310, 27 December 1929, Male, Kao Kuap, Krat, Siam and USNM 324311, 27 December 1929, Male, Kao Kuap, Krat, Siam. This locality lies within the present borders of the Kingdom of Cambodia.

CORAL-BILLED SCIMITAR BABBLER *Pomatorhinus ferruginosus*

Five specimens collected at two localities, both on Mt Ngoc Linh, plus three specimens collected at Mt Kon Ka Kinh, were compared with 16 specimens including one topotype of *P. f. standfordi*, three topotypes of *P. f. albogularis*, and the holotype of *P. f. namdapha*, representing the four subspecies with the closest geographical ranges (Deignan 1964, Ripley 1980), and are sufficiently distinct to be named as:

Pomatorhinus ferruginosus dickinsoni, subsp. nov.

Holotype. BMNH registration number 1998.71.7, adult male collected at *c.* 2,200 m asl, Mt Ngoc Linh, 7 April 1998. The holotype was collected and prepared as a standard museum skin by JCE (Fig. 4).

Paratypes. An additional specimen was collected at *c.* 2,000 m asl, Mt Ngoc Linh, 24 March 1998 and is currently held at the BirdLife office in Hanoi, registration number 2001.8.3. This paratype was collected and prepared as a standard museum skin by LTT. Eight further specimens of this taxon were collected by PRS and Terry Chesser (RTC), AMNH, *c.* 1,450 m asl, 12 km south-west of Nuoc Xa, Mt Ngoc Linh, Quang Nam Province, 20 - 28 March 1999. Three of these were prepared as standard museum skins and can be considered ***Paratypes.*** They are held in the AMNH. They comprise AMNH 833150 a female, collected 20 March 1999 and prepared by PRS, AMNH 833151 a female, also collected 20 March 1999 by RTC, and AMNH 833152 another female, collected on 25 March 1999 also by PRS. Three further specimens were collected on Mt Kon Ka Kinh, Gia Lai Province as follows: 2001.8.4, 26 March 1999, male; 2001.8.5, 27 March 1999, female; 2001.8.6 March or April 1999 female. These three paratypes were collected and prepared as standard museum skins by JCE and are held at the BirdLife office in Hanoi.

Diagnosis. The seven taxa currently assigned to this species have predominately orange or strongly buff underparts. The diagnostic features of *P. f. dickinsoni* are its entirely white throat, breast and centre to the belly and only slight olive-brown or buff flanks. In *P. f. orientalis* the entire underparts, except the white chin and throat, are rich buff. The upperpart colouration of *P. f. dickinsoni* is slightly more olive than *P. f. orientalis* especially on the remiges and rectrices and less rufous than *P. f. orientalis*. The underside of the rectrices in *P. f. dickinsoni* are also less rufous, more grey-brown (Fig. 4). Reference was recently made to the diagnostic features of this subspecies in Robson (2000).

Measurements (mm) and bare-part colouration. Holotype. Maxilla 26.5; tarsus 35; wing 92; tail 105; iris yellow; legs brown horn; bill scarlet-orange. ***Paratypes.*** 2001.8.3 Maxilla 28.5; tarsus 32; wing 88; tail unknown as broken during collection; iris colour not noted; legs brown horn; bill red; AMNH 833150 Maxilla 39.5; tarsus 35; wing 89; tail 102; iris colour pale yellow; legs; bill red; AMNH 833151 Maxilla 38.5; tarsus 34.5; wing 88; tail 102.5; iris colour pale yellow; tarsi and toes horn brown; bill red-orange.

AMNH 833152 Maxilla 38.5; tarsus 36.5; wing 92; tail 106; iris colour pale yellow; legs horn; bill red. 2001.8.4 Maxilla 28; tarsus 33; wing 93; tail 112; iris yellow; legs yellow horn; bill coral orange: 2001.8.5 Maxilla 29; tarsus 33; wing 89; tail 99; iris yellow; legs flesh-brown; bill coral orange: 2001.8.6 Maxilla 27.5; tarsus 36; wing 94; tail 110; iris yellow; legs grey flesh; bill coral red.

Ecology and behaviour. Typically forages in small flocks. Wary and quickly moves away through forest undergrowth, calling loudly when disturbed by the approach of an observer.

Habitat. Typically observed in bamboo and undergrowth in lower montane evergreen forest, especially in second growth containing bananas, at forest edge.

Distribution. In addition to the specimen records detailed here from the northern and southern slopes of Mt Ngoc Linh and Mt Kon Ka Kinh, I have observed this taxon at Cong Troi and on Mt Ngoc Boc in Kon Tum Province (Eames *et al.* 2001 and Le Trong Trai *et al.* 1999). This species, and possibly this subspecies, has also now been observed in Dong Hua Sao National Biodiversity Conservation Area on the Bolovens Plateau in southern Laos (Thewlis *et al.* 1996). A colour photograph of a Coral-billed Scimitar Babbler trapped in Nakai-Nam Theun National Biodiversity Conservation Area in Laos in 1994, matching the description of *P. f. dickinsoni*, is published in Duckworth *et al.* (1999).

Etymology. I name this taxon in honour of Edward C. Dickinson, co-author of the first comprehensive field guide to the birds of South-east Asia (*q.v.* King *et al.* 1975).

Specimens examined. *P. f. standfordi*: BMNH 1941.12.1.125 (Topotype), 1 May 1934, Female, Kambaili near Myitkyina, Burma; BMNH 1939.12.8, 8 January 1939, Female, Htingnan, Upper Burma; BMNH 1939.12.8.142, 20 August 1938, Male, Nam Tamai Valley, Upper Burma; BMNH 1939.12.8.141, 29 August 1938, Female, Nam Tamai, Upper Burma. *P. f. albogularis*: BMNH 1924.12.22.19, 3 January 1924, Female, Toak Plateau, Tenasserim, Burma; BMNH 86.10.1.3572, 10 April 1878, Male, Mwalabo, Tavoy District, Burma; BMNH 86.10.1.3570, 3 February 1877 (Topotype), Male, Mooleyit Range, Burma; BMNH 86.10.1.3571, 31 January 1877 (Topotype), Male, Mooleyit Range, Burma. *P. f. albogularis* (*mariae*): BMNH 1948.30.1966, 14 April 1940, Male, Nattaung, Karenni District, Burma; BMNH 1948.29.1965 (Topotype), 3 November 1939, Female, Tahndaung, Toungoo District, Burma; BMNH 88.4.20.725, 16 April 1875, Female, Karen Hills, Burma; TISTR 53-2495, 28/10/65, Female, Doi Pha Hom Pok, Thailand; TISTR 53-1389, 16 November 1965, Male, Doi Pha Hom Pok, Thailand. *P. f. orientalis*: BMNH 1930.7.16.175, 15 November 1929, Male, Sa Pa, Vietnam; BMNH 1930.7.16.176, 15 November 1929, Female, Sa Pa. *P. f. namdapha*: USNM 583153 (Holotype), 22 March 1979, Male, Mi Camp East of Miao, Nos Dihing River Road, Arunachal Pradesh, India. Details of the three dark orange-breasted races (*P. f. ferruginosus*, *P. f. formosus*, and *P. f. phayrei*) examined are not included here.

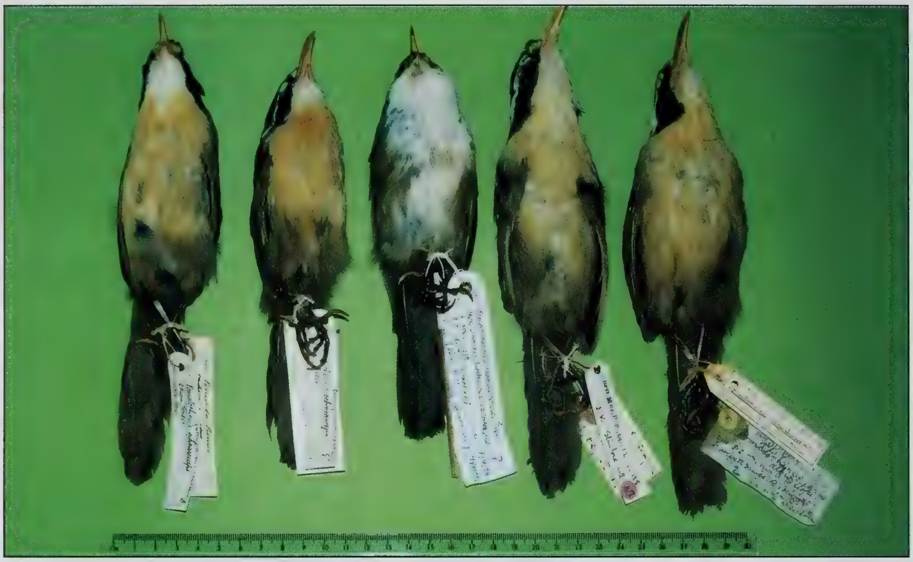

Figure 4. Ventral view of the holotype of *Pomatorhinus ferruginosus dickinsoni* (centre) together with (from left to right) *P. f. orientalis* BMNH 1930.7.16.175 and BMNH 1930.7.16.176, *P. f. standfordi* BMNH 1941.12.1.125 (Topotype) and *P. f. albogularis* BMNH 86.10.1.3570 (Topotype) (photograph by J.C. Eames).

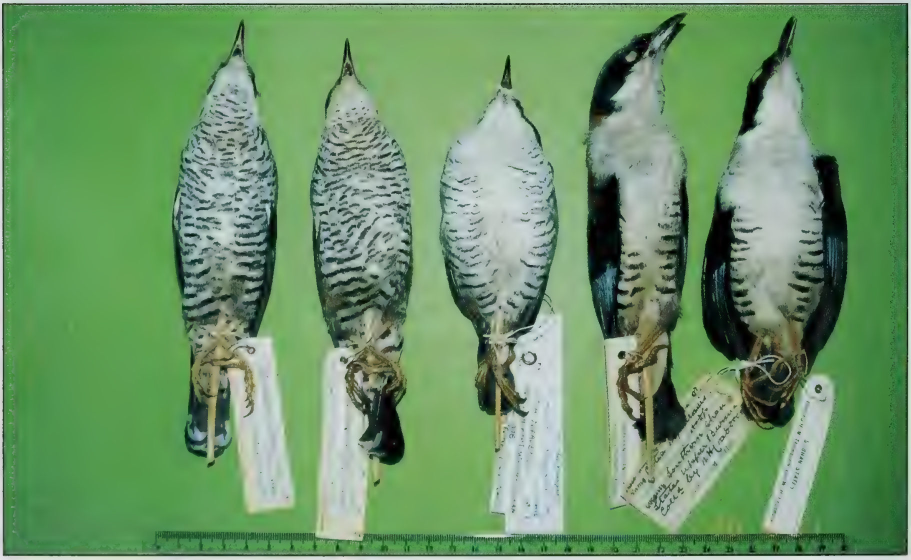

Figure 5. Ventral view of the holotype of *Cutia nipalensis hoae* (centre) together with (from left to right) *C. n. legalleni* BMNH 1919.12.20.333 (Paratype) and BMNH 1919.12.20.530 (Topotype), and *C. n. melanchima* BMNH 1900.12.20.430 and BMNH 1903.12.24.410 (photograph by J.C. Eames).

CUTIA *Cutia nipalensis*

Three males collected on Mt Ngoc Linh were compared with 31 male specimens including two paratypes and 11 topotypes of *C. n. legalleni*, and 20 specimens of *C. n. melanchima*, which have the closest geographical ranges (Deignan 1947 and Deignan 1964). The series of three differed sufficiently to be named as:

Cutia nipalensis hoae, subsp. nov.

Holotype. BMNH registration number 1998.71.8, adult male collected at *c*. 2,200 m asl, Mt Ngoc Linh, 1 April 1998 by LTT and prepared as a standard museum skin by JCE (Fig. 5).

Paratypes. Two additional males were collected at *c*. 2,300 m asl, Mt Ngoc Linh, 7 April 1998 and are both deposited at the BirdLife office in Hanoi, registration numbers 2001.8.7 and 2001.8.8. Both specimens were collected and prepared as standard museum skins by LTT.

Diagnosis. *Cutia nipalensis hoae* is intermediate between *C. n. melanchima* and *C. n. legalleni*, and is closer to the latter form but has very distinctive and uniquely patterned underparts. *C. n. hoae* differs from *C. n. melanchima* and *C. n. legalleni* in the following respects: the colour of the mantle, back and upper-tail coverts of *C. n. hoae* is very similar to *C. n. melanchima,* being paler and more orange in these two forms than the deeper chestnut of *C. n. legalleni*. The scapulars in *C. n. hoae* are dark grey with olive tips. In *C. n. melanchima* however, the scapulars are olive with traces of chestnut-orange and in *C. n. legalleni*, the scapulars are browner with dark brown centres. In *C. n. hoae* the chin, throat and centres to the breast and belly are white. The sides of the breast and flanks are white, finely barred (vermiculated) very dark brown or black. In *C. n. melanchima* the chin, throat and breast are white, whilst the black barring on the underparts is much broader but is confined to the flanks, the ground colour of which are pale buff, whilst the centre of the belly and breast varies from off-white to greyish white. The barring on the underparts of *C. n. legalleni* covers the entire underparts, including the throat and centre of the breast and belly. Underpart barring in *C. n. legalleni* is broader than in *C. n. hoae* but very much narrower in both these forms than on *C. n. melanchima*. In the diagnosis of this new taxon specimens of *C. n. melanchima* were examined from Thailand and various localities in Burma, including Mt Victoria. E. C. Dickinson (*in litt.* 1999) informed me that birds from this latter locality are atypical, although this was not borne out by direct observation by me at this site in January 2002 and comparison of eight specimens from this locality with birds from elsewhere in Burma and Thailand revealed no obvious differences. Although *C. n. melanchima* has a large geographical range the underpart pattern was consistent in all 14 specimens examined. Specimens were not examined from north-west Vietnam. Reference was recently made to the diagnostic features of this new subspecies in Robson (2000).

Measurements (mm) and bare-part colouration. Holotype*.** Maxilla 24; tarsus 28; tail 63; wing 94; bill black horn, but gunmetal at base of lower mandible; legs mustard yellow; iris dark brown. ***Paratypes. Specimen number 2001.8.7: Maxilla 25; tarsus 27.5; tail 70; wing 91; bill black; legs yellow; iris black. Specimen Number 2001.8.8: Maxilla 25.5; tarsus 30; tail 64.5; wing 91; bill black; legs yellow; iris black.

Ecology and behaviour. The holotype was singing from the lower canopy immediately prior to its collection.

Habitat. Upper montane evergreen forest above 2,200 m asl.

Distribution. This taxon is currently known only from Mt Ngoc Linh, Kon Tum Province, Vietnam. However, a pair of Cutias was also observed on Mt Kon Ka Kinh and the female collected (Le Trong Trai *et al*. 2000). The subspecific diagnosis of this female specimen can only be completed once females have been collected from Mt Ngoc Linh; however the underpart pattern strongly resembles *C. n. hoae*.

Etymology. I name this taxon in honour of Ms Dinh Thi Hoa who was present at the collection of the holotype.

Specimens examined. *C. n. melanchima*: BMNH 95.7.14.2365, January 1895, male, Daphla, Burma; BMNH 1903.12.28.57, undated, male, Southern Shan States, Burma; BMNH 1941.12.1.390, 13 May 1934, male, Kambaiti, Myitkyina, Burma; BMNH 1903.12.24.410, undated, male, Southern Shan States, Burma; BMNH 94.7.3.40, March 1894, male, Byingyu, Shan States, Burma; BMNH 1903.12.24.56, undated, male, Loi Maw, Southern Shan States, Burma; BMNH 1900.12.20.430, undated, male, Southern Shan States, Burma; BMNH 1905.9.10.384, 1904, male, Mt Victoria, Chin Hills, Burma; BMNH 1905.9.10.386; 1904, male, Mt Victoria, Chin Hills, Burma; BMNH 1905.9.10.385, 1904, male, Mt Victoria, Chin Hills, Burma; USNM 330608, 01 May 1931, male, Pang Me Ton (Doi Nang Ka), Thailand; USNM 534951, 04 November 1965, male, Doi Pha Hom Pok, Thailand; USNM 330609, 06 November 1930, male, Doi Nang Ka, Thailand; USNM 534952, 04 November 1965, male on plumage (label says female), Doi Pha Hom Pok, Thailand. *C. n. legalleni*: BMNH 1928.6.26.1483, 20 March 1927, male, Di Linh, Vietnam; BMNH 1928.6.26.1482, 20 March 1927, male, Di Linh, Vietnam; BMNH 1928.6.26.1401 (Topotype), 30 July 1927, male, Da Lat, Vietnam; BMNH 1919.12.20.333 (Paratype), 01 May 1918, male, Da Lat, Vietnam; BMNH 1919.12.20.530 (Topotype), 04 May 1918, male, Da Lat, Vietnam; BMNH 1927.6.5.1052, 13 March 1927, male, Di Linh, Vietnam; USNM 278470 (Paratype), 04 May 1918, male, Da Lat, Vietnam; USNM 359090 (Topotype), June 1939, male, Langbian Peaks, Vietnam; USNM 359088 (Topotype), June 1939, male, Langbian Peaks, Vietnam; USNM 359081 (Topotype), June 1939, male, Langbian Peaks, Vietnam; USNM 359089 (Topotype), June 1939, male, Langbian Peaks, Vietnam; USNM 359080 (Topotype), June 1939, male, Langbian Peaks, Vietnam; USNM 359087 (Topotype), June 1939, male, Langbian Peaks, Vietnam; USNM 475765 (Topotype), 22 May 1961, male, Mt Lang Bian, Vietnam; USNM 475766 (Topotype), 29 May 1961, male, Mt Lang Bian, Vietnam; USNM 475769, 11 June 1961, male, Da Lat 6 km s, Vietnam; USNM 475767 (Topotype), 29 May 1961, male, Mt Lang Bian, Vietnam. Specimens of *C. n. nipalensis* from Nepal, Bhutan and Darjeeling and *C. n. cervinicrissa* from Selangor, Malaysia in the BMNH collection were also examined but are not detailed here.

CHESTNUT-TAILED MINLA *Minla strigula*

The two specimens collected from Mt Ngoc Linh possess a striking head pattern and thus differ markedly from 28 specimens examined, including two topotypes of *M. s. yunnanensis* and three topotypes of *M. s. castanicauda*, which are the two subspecies with the closest geographical ranges (Hume 1877, Rothschild 1921, Deignan 1964), and I thus propose the name:

Minla strigula traii, subsp. nov.

Holotype. BMNH registration number 1998.71.13 adult female collected at *c.* 2,300 m asl, Mt Ngoc Linh, 5 April 1998 by LTT and prepared as a standard museum skin by JCE (Figs. 6 and 7).

Paratype. An additional specimen was collected at *c.* 2,350 m asl on Mt Ngoc Linh, 29 March 1998, and is held at the BirdLife office in Hanoi, registration number 2001.8.9. The paratype was collected and prepared as a standard museum skin by LTT.

Diagnosis. The olive-brown mantle of *M. s. traii* more closely approaches that of *M. s. castinicauda* from Thailand and Burma than the more chestnut mantle of *M. s. yunnanensis* from north-west Vietnam and China. It should be noted however, that whilst the back, rump and upper tail coverts of *M. s. yunnanensis* were described as very strongly marked with olive-yellow, when worn these parts are dark grey only slightly tinged with olive (Rothschild 1921), all the specimens I examined showed olive-chestnut upperparts rather than olive-yellow or dark grey, tinged olive. In *M. s. traii*, the basal half of the rectrices are chestnut-brown, as in *M. s. yunnanensis*, rather than the orange-brown of *M. s. castinicauda*. Comparison of the underpart colouration is difficult because of the tendency of the yellow pigment to fade. However, the underpart colouration of *M. s. traii* is bright canary yellow, grading to slight olive tones on the flanks. All skins examined of *M. s. castinicauda* and *M. s. yunnanensis* had dirty olive-grey underparts but *M. s. yunnanensis* showed more traces of yellow. The chin and throat feathers of *M. s. traii* are yellow, narrowly fringed with black, which is more conspicuous on the sides of the throat. This is in particular contrast to both *M. s. yunnanensis* and *M. s. castancauda* which, at least in all specimens examined, have white or yellow-white chins and throats with feathers more broadly tipped black. In both these latter forms, the black extends across the entire throat. In *M. s. yunnanensis* and *M. s. castancauda* the lores and ear-coverts are grey-olive with pale central shaft streaks (sometimes yellowish) and a black feather tip. The lores are much duskier in *M. s. castinicauda* than in *M. s. yunnanensis*. However, in *M. s. traii* the lores are off-white and there is a broad off-white line extending from the gape, beneath the eye, to behind the ear-coverts that contrasts with its broad black malar stripe, which becomes much broader on the cheek. This broad off-white line and solid black malar stripe are absent in both *M. s. castinicauda* than in *M. s. yunnanensis* (Figs. 6 and 7). The distinctive head pattern of this subspecies has recently been illustrated in comparison with *M. s. castanicauda* (Robson 2000).

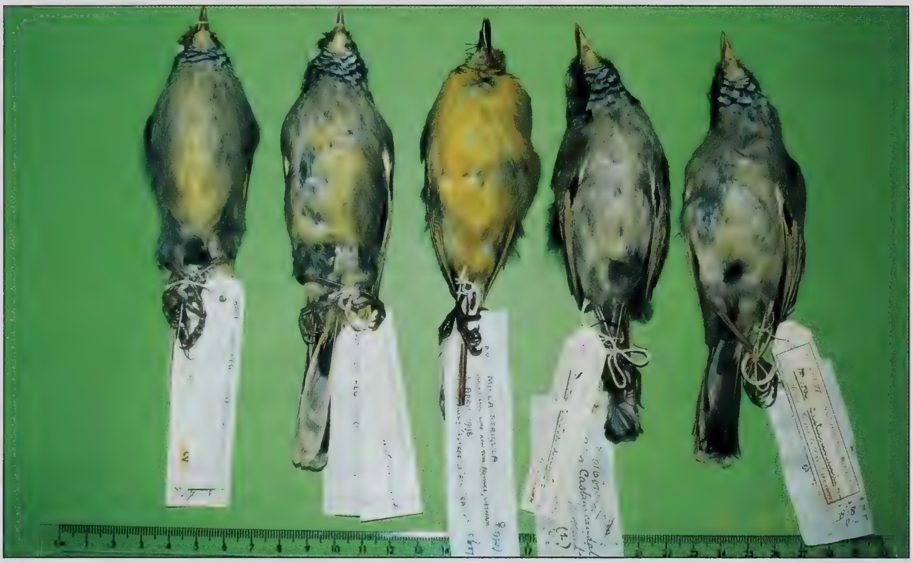

Figure 6. Ventral view of the holotype of *Minla strigula traii* (centre) together with (from left to right) *M. s. yunnanensis* BMNH 1930.7.16.303 and BMNH 1930.7.16.304, and *M. s. castanicauda* BMNH 86.10.1.6789 (Topotype) and BMNH 86.10.1.6788 (Topotype) (photograph by J.C. Eames).

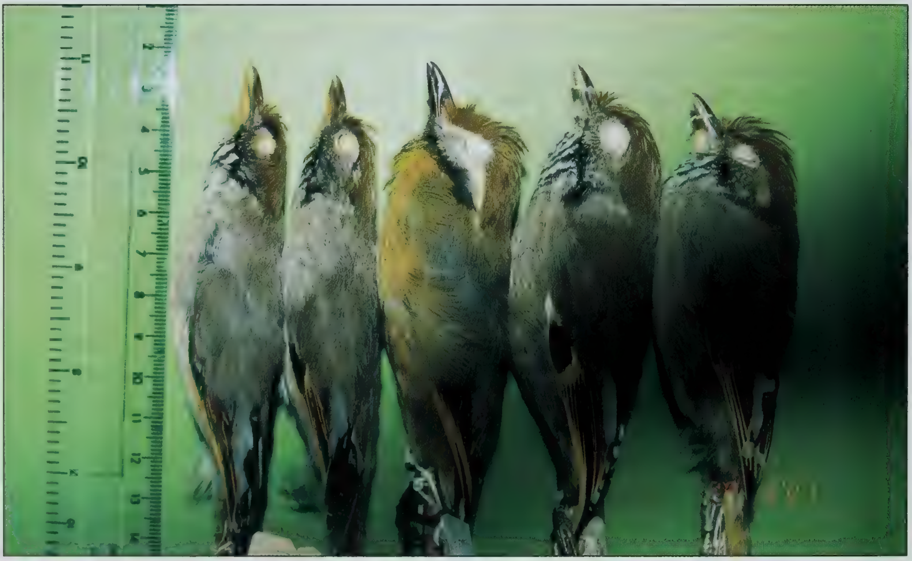

Figure 7. Profile view of the holotype of *Minla strigula traii* (centre) together with (from left to right) *M. s. yunnanensis* BMNH 1930.7.16.303 and BMNH 1930.7.16.304, and *M. s. castanicauda* BMNH 86.10.1.6789 (Topotype) and BMNH 86.10.1.6788 (Topotype) (photograph by J.C. Eames).

Measurements (mm) and bare-part colouration. Holotype. Maxilla 16; tarsus 28; tail 78; wing 74; bill black; iris dark brown; legs dark flesh. ***Paratype.*** Maxilla 17; tarsus 28; tail 75.5; wing 72; bill black; iris brown; legs dark flesh.

Ecology and behaviour. Only observed in the forest canopy near the summit of Mt Ngoc Linh.

Habitat. Upper montane evergreen forest above c. 2,300 m asl.

Distribution. Currently known only from Mt Ngoc Linh, Kon Tum Province, Vietnam.

Etymology. I name this taxon in honour of my colleague Le Trong Trai, who collected both the holotype and the paratype. Le Trong Trai is co-author of *Chim Viet Nam* (Nguyen Cu *et al*. 2000).

Specimens examined. *M. s. yunnanensis*: BMNH 1930.7.16.305, 07 December 1929, female, Fan Si Pan, Vietnam; BMNH 1930.7.16.307, 21 November 1929, female, O Quy Ho, Vietnam; BMNH 1930.7.16.301, 11 Octeber 1929, male, Fan Si Pan, Vietnam; BMNH 1930.7.16.302, 13 December 1929, male, Fan Si Pan, Vietnam; BMNH 1930.7.16.306, 27 November 1929, unsexed, O Quy Ho, Vietnam; BMNH 1930.7.16.303, 14 December 1929, female, Fan Si Pan, Vietnam; BMNH 1.7.16.304, 14 December 1929, male, Fan Si Pan, Vietnam; BMNH 1930.7.16.300, 1 March 1929, male, Fan Si Pan, Vietnam; USNM 296448 (Topotype), 21 April 1923, male, Li Kiang Mtains, Yunnan, China; USNM 296444 (Topotype), August 1923, male, Li Kiang Mtains, Yunnan, China; USNM 314129, October 1923, male, Ndamucho, Yunnan, China; USNM 390381, 1 May 1947, male, Dreyi, Mishmi Hills, Assam, India; USNM 296457, November 1923, male, Mtains of Hofuping, Mekong Valley, China. *M. s. castanicauda*: BMNH 86.10.1.6787 (Topotype), 31 January 1877, male, Moolayit, Burma; BMNH 86.10.1.6789 (Topotype), 19 February 1977, male, Moolayit, Burma; BMNH 86.10.1.6788 (Topotype), 31 January 1977, male, Moolayit, Burma ; BMNH 88.4.20.1210, 13 April 1977, female, Simborg (Moolai), Burma; USNM 534454, 04 November 1964, male, Doi Angka, Thailand; USNM 534972, 2 November 1965, male, Doi Pho Hom Pok, Thailand; USNM 534973, 13 November 1965, male, Doi Pho Hom Pok, Thailand; USNM 534974, 22 November 1964, female, Doi Inthanon, Thailand; USNM 534975, 28 November 1964, male, Doi Inthanon, Thailand; TISTR 53-1423, 21 October 1965, male, Doi Pha Hom Pok, Thailand; TISTR 53-2582, 1 February 1971, male, Doi Inthanon, Thailand; NRST 53-2585, 2 February 1971, female, Doi Inthanon, Chom Thong, Thailand; TISTR 53-2583, 1 February 1971, female, Doi Inthanon, Chom Thong, Thailand; NRST 53-2586, 5 February 1971, female, Doi Inthanon, Chom Thong, Thailand; NRST 53-2586, 5 February 1971, female, Doi Inthanon, Chom Thong, Thailand.

Golden-breasted Fulvetta *Alcippe chrysotis*

Two specimens collected from Mt Ngoc Linh compared with 18 specimens, including three topotypes of *A. c. amoena* and two of *A. c. forresti*, the two subspecies with the closest geographical ranges (Deignan 1964, Rothschild 1926, Stanford and Mayr 1941), were sufficiently distinct to be named:

Alcippe chrysotis robsoni, subsp. nov.

Holotype. BMNH registration number 1998.71.15, age and sex undetermined, collected at *c.* 1,900 m asl, Mt Ngoc Linh, 20 March 1998 by LTT and prepared as a standard museum skin by JCE (Fig. 8).

Paratype*.* An additional specimen was collected on Mt Ngoc Linh, 5 April 1998 and is held at the BirdLife office in Hanoi, registration number 2001.8.10. The paratype was collected by LTT and prepared as a standard museum skin by JCE.

Diagnosis. The nominate form, *A. chrysotis forresti* and *A. c. amoena* all show a grey chin and throat, sometimes with whitish or silvery tips, whereas *A. c. robsoni* shows an entirely yellow throat and chin (the throat of the paratype was damaged during collection). The nominate form has a charcoal-grey crown and sometimes shows an indistinct, white central crown stripe though this is more often absent. In *A. c. forresti* and *A. c. amoena* the colour of the crown varies from charcoal-grey to black and both forms show a broad but sometimes broken, white median crown stripe. In *A. c. robsoni* the crown is drab olive-grey and the central crown stripe is pronounced and has an off-white hue. The ear-coverts in *A. c. robsoni* are olive-grey but are silver-grey in the nominate form, *A. c. forresti* and *A. c amoena.* The secondaries of *A. c. robsoni* are edged bright orange but in the nominate form, *A. c. forresti* and *A. c. amoena* they are usually yellow or sometimes yellow-orange. The nominate form lacks an eye-ring and in *A. c. forresti* it is narrow, broken or absent. In *A. c. amoena* and *A. c. robsoni* an eye-ring is present (Fig. 8).

Measurements (mm) and bare-part colouration. Holotype*.* Maxilla 9; tarsus 21; wing 49; tail too damaged/loose to measure accurately; iris dark brown; bill grey-horn/gun-metal; legs pale-flesh. ***Paratype****.* Maxilla 9.5; tarsus 22; wing 52; tail 49; iris colour not noted; bill brown horn; legs flesh.

Ecology and behaviour. Forages in small flocks. Tame and confiding.

Habitat. Found in bamboo and undergrowth in montane evergreen forest above *c.* 1,900 m asl.

Distribution. Currently known only from Mt Ngoc Linh, Kon Tum Province, Vietnam.

Etymology. I name this taxon in honour of Craig R. Robson, author of a *Field guide to the birds of Thailand and South-east Asia* (*q.v.* Robson 2000).

Specimens examined. *A. c. chrysotis*: BMNH 1937.17.281, 1 March 1936, male, East Bhutan; BMNH 1.17.280, 29 February 1936, male, East Bhutan; BMNH 193.1.17.283, 22 November 1936, female?, Yonpuha, East Bhutan. *A. c. forresti*: BMNH 1921.7.15.280 (Topotype), December 1919, male, Shweli-Salwin divide, Yunnan, China; BMNH 1922.12.7.231; 15 December 1921, male, Lichiang Range, Yunnan, China; BMNH1941.5.30.4176, 26 April 1934, male, Kambaiti, Myitkyina District, Burma; BMNH 1941.12.1.509, 22 Mat 1935, male, Kambaiti, Myitkyina District, Burma; BMNH 1921.7.15.281 (Topotype), December 1919, female, Shweli-Salwin divide, Yunnan, China; BMNH 1933.11.13.300, April 1931, unsexed, Ta Li Shu, Yunnan, China. *A. c. amoena*:

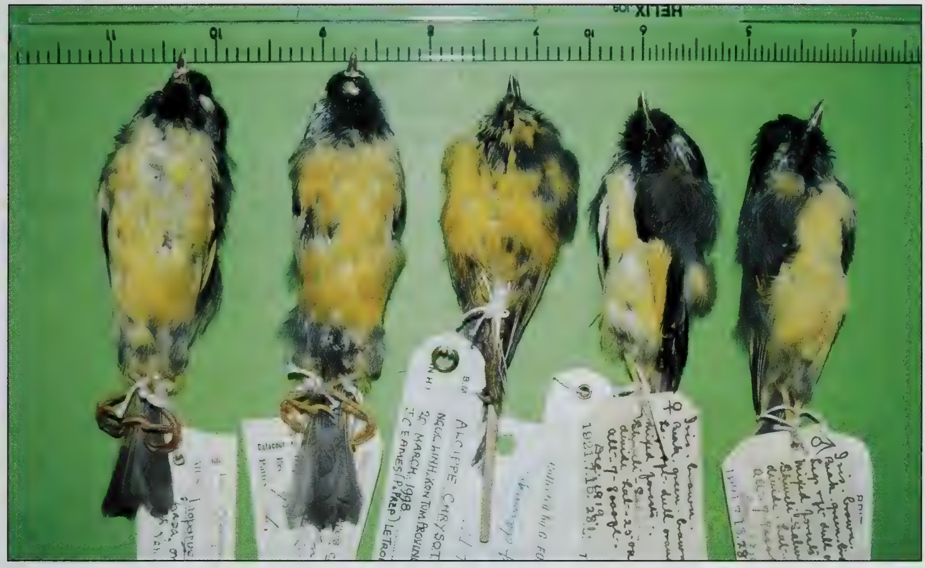

Figure 8. Ventral view of the holotype of *Alcippe chrysotis robsoni* (centre) together with (from left to right) *A. c. amoena* BMNH 1930.4.16.335 (Topotype) and BMNH 1930.7.16.336 (Topotype), and *A. c. forresti* BMNH 1921.7.15.281 (Topotype) and BMNH 1921.7.15.280 (Topotype) (photograph by J. C. Eames).

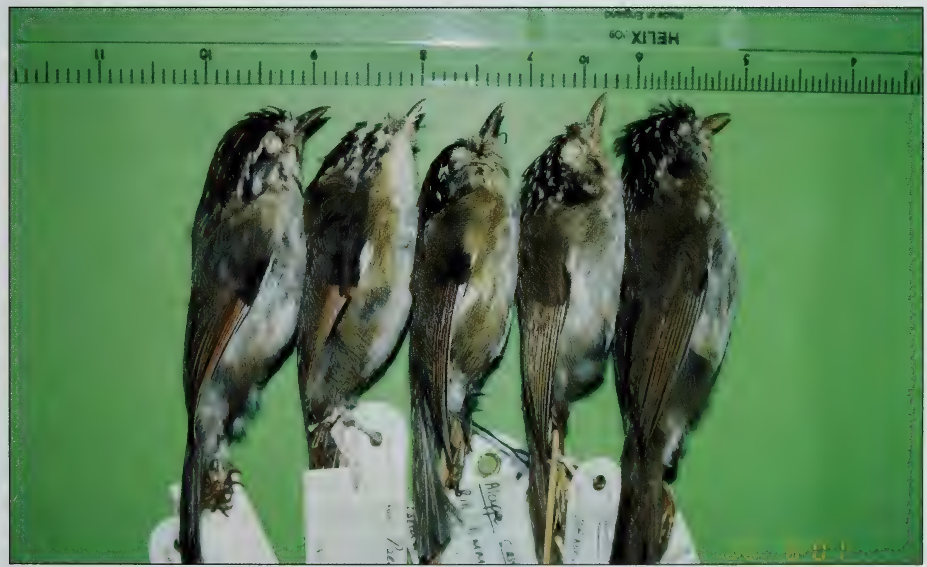

Figure 9. Profile view of the holotype of *Alcippe castaneceps stepanyani* (centre) together with (from left to right) *A. c. exul* BMNH 1932.5.14.161 (Topotype) and BMNH 1930.9.16.328, and *A. c. klossi* BMNH 1919.12.20.301 (Paratype) and 1939.12.11.32 (Topotype) (photograph by J. C. Eames).

BMNH 1930.7.16.336 (Topotype), 26 November 1929, female, Sa Pa, Vietnam; BMNH 1930.7.16.332, 19 November 1929, male, O Quy Ho, Vietnam; BMNH 19307.16.334; 28 November 1929, male, O Quy Ho, Vietnam; BMNH 1930.4.16.335 (Topotype), 18 November 1929, unsexed, Sa Pa, Vietnam; BMNH 1924.12.21.184, 20 June 1924, male, Ngoi Tio, Vietnam; BMNH 1924.12.21.188, 6 June 1924, female, Ngoi Tio, Vietnam; BMNH 1930.7.16.333, 16 November 1929, male, O Quy Ho, Vietnam; BMNH 1924.12.21.189, 19 June 1924, female, Ngoi Tio, Vietnam; BMNH 1930.7.16.334 (Topotype), 11 December 1929, unsexed, Fan Si Pan, Vietnam.

RUFOUS-WINGED FULVETTA *Alcippe castaneceps*

Three specimens collected from Mt Ngoc Linh, when compared with 15 specimens including two paratypes and five topotypes of *Alcippe castaneceps klossi* and one topotype of *A. c. exul* (Robinson & Kloss 1919, Delacour 1932, Deignan 1964,) the two subspecies with the closest geographical ranges in Indochina, were sufficiently distinct to be named:

Alcippe castaneceps stepanyani, subsp. nov.

Holotype. BMNH registration number 1997.7.12, adult male (enlarged testis) collected at *c*. 2,200 m asl, Mt Ngoc Linh, 9 May 1996. Collected and prepared as a standard museum skin by JCE (Fig. 9).

Paratypes. BMNH registration numbers 1997.7.13, adult male and 1997.7.14, adult female, both also collected at *c*. 2,200 m asl, Mt Ngoc Linh, 9 May 1996. Collected and prepared as standard museum skins by JCE.

Diagnosis. This form is intermediate between *A. c. exul* and *A. c. klossi* in the colouration of the crown but has a distinctive pattern on the remiges. The mantle and back of *A. c. stepanyani* are olive brown, very similar to *A. c. exul* from Laos and barely distinguishable in series from *A. c. klossi* and *A c. exul*. *A c. exul* from north-west Vietnam shows, however, a slightly more chestnut-olive mantle and back, whilst *A. c. klossi* tends more towards chestnut. The crown and nape of *A. c. stepanyani* is a darker maroon-brown than the chestnut-brown of *A. c. exul* and the central shaft-streaks appear whiter, less cream. The crown and nape of *A. c. stepanyani* are rich chestnut-brown with yellow-buff central shaft streaks. In *A. c. klossi* the crown and nape are darker, more black-brown (almost burgundy as a consequence of foxing) and the central shaft streaks are dirty white, lacking any yellow or cream tones. In *A. c. exul* the crown and nape are more ginger and less chestnut. The chin, throat, breast and belly in *A. c. stepanyani* are creamy-white or pale buff with chestnut-buff sides to the breast and flanks. The underparts of *A. c. stepanyani* are therefore distinguishable from the underparts of *A. c. klossi* and *A. c. exul* from Laos, which are whiter and lack extensive chestnut-buff flanks. The underparts of *A. c. stepanyani* show closest similarity in both ground colour and the extent of chestnut-buff flanks to *A. c. exul* from north-west Vietnam. However, *A. c. exul* shows a greater extent of chestnut-buff on the flanks. The wing pattern (but not colouration) in *A. c. stepanyani* is closer to *A. c. exul* but the colour differs as follows: in *A. c. stepanyani* the greater and primary coverts are black as in *A. c. exul* but the outer webs of primaries 4-8 are chestnut rather than orange. In *A. c. klossi* only the primary coverts are entirely black and there is no orange wing panel. The outer webs of primaries 4-8 are pale chestnut-brown (Fig. 9). Dickinson (*in litt* 1999). has pointed out that this species suffers from colour change after collection.

Measurements (mm). Holotype. Maxilla 11.5; tail 47; tarsus 21; wing 60. ***Paratypes.*** BMNH Registration number 1997.7.13: Maxilla 12; tarsus 22; tail 41; wing 60. BMNH Registration number 1997.7.14: Maxilla 10; tarsus 20; tail 43; wing 56.

Ecology and behaviour. Forages in small flocks sometimes associating with mixed feeding parties of small passerines. Frequently climbs and descends tree trunks in a manner similar to treecreepers *Certhia* spp.

Habitat. Undergrowth in montane evergreen forest above *c*. 2,000 m asl.

Distribution. Known only from Mt Ngoc Linh, Kon Tum Province, Vietnam. However, this species was recently observed on Mt Ngoc Boc in southern Kon Tum Province and Mt Kon Ka Kinh in Gia Lai Province (Le Trong Trai *et al*. 2000, Eames *et al*. 2001). Birds at these locations are likely to belong to the form *A. c. stepanyani*.

Etymology. I name this taxon in honour of Leo Surenovich Stepanyan who led 11 ornithological expeditions to Vietnam over 13 years (1978-1990) on behalf of the Russian Acadamy of Sciences, and who is the author of *Birds of Vietnam* (*q.v.* Stepanyan 1995).

Specimens examined. *A. c. exul*: BMNH 1932.5.14.162 (Topotype), 26 January 1932, male, Phou Kong Ntoul, Laos; BMNH 1932.5.14.161, 21 December 1931, female, Paksong, Laos; BMNH 1930.7.16.324, 11 November 1929, male, Sa Pa, Vietnam; BMNH 1930.7.16.323, 14 November 1929, unsexed, Sa Pa, Vietnam; BMNH 1930.7.16.328, 7 December 1929, female, Fan Si Pan, Vietnam; BMNH 1930.7.16.331, 20 November 1929, unsexed, O Quy Ho, Vietnam; USNM 350172, 10 April 1936, male, Doi Pu Kha, Thailand; USNM 350173; 10 April 1936, female, Doi Pu Kha, Thailand. *A. c. klossi*: BMNH 1939.12.11.32 (Topotype), 7 March 1939, unsexed, Lang Bian, Vietnam, BMNH 1919.12.20.301, (Topotype), 20 April 1918, male, Lang Bian, Vietnam; USNM 278466 (Paratype), 16 April 1918, male, Langbian Peaks, Vietnam; USNM 278467 (Paratype), 24 April 1918, male, Langbian Peaks, Vietnam; USNM 360916 (Topotype), December 1939, unsexed, Langbian Peaks, Vietnam; USNM 360917 (Topotype), December 1939, male, Langbian Peaks, Vietnam; USNM 359130 (Topotype), June 1939, unsexed, Langbian Peaks, Vietnam.

RUSTY-CAPPED FULVETTA *Alcippe (brunnea) dubia*

Two specimens collected from Mt Ngoc Linh, when compared with 19 specimens comprising five specimens of *A. d. intermedia* and 14 specimens of *A. d. genestier*, the subspecies with the closest geographical ranges (Deignan 1964), were sufficiently distinct to be named:

Alcippe dubia cui, subsp. nov.

Holotype. BMNH registration number 1997.7.8, adult male (one enlarged testis) collected at *c.* 2,200 m asl, Mt Ngoc Linh, 16 May 1996 by NC and prepared as a standard museum skin by JCE (Fig. 10).

Paratype. BMNH registration number 1997.7.9, adult female collected with the male on the same date by NC and prepared as a standard museum skin by JCE.

Diagnosis. The upperparts, including crown, nape and ear-coverts are a slightly darker shade of olive-brown than *A. d. genestieri*. *A. d. genestieri* from Yunnan and *A. d. intermedia* are slightly lighter brown on the mantle with less olive than birds from north-west Vietnam. The crown colour *of A. d. intermedia* is slightly more ginger than *A. d. genestieri* from Yunnan and contrasts with the darker crown of *A. d. cui*. The underparts of *A. d. cui* are entirely rich buff with warm chestnut flanks and are a little paler in the centre of the throat and belly. In *A. d. genestieri* and *A. d. intermedia* the underparts are generally white or off-white and the breast and belly are pale buff admixed with white, whilst the flanks are rich buff. The sides of the neck in *A. d. cui* are not stippled and in this respect it approaches *A. d. genestieri* (Fig. 10). Reference was recently made to the diagnostic features of this subspecies in Robson (2000).

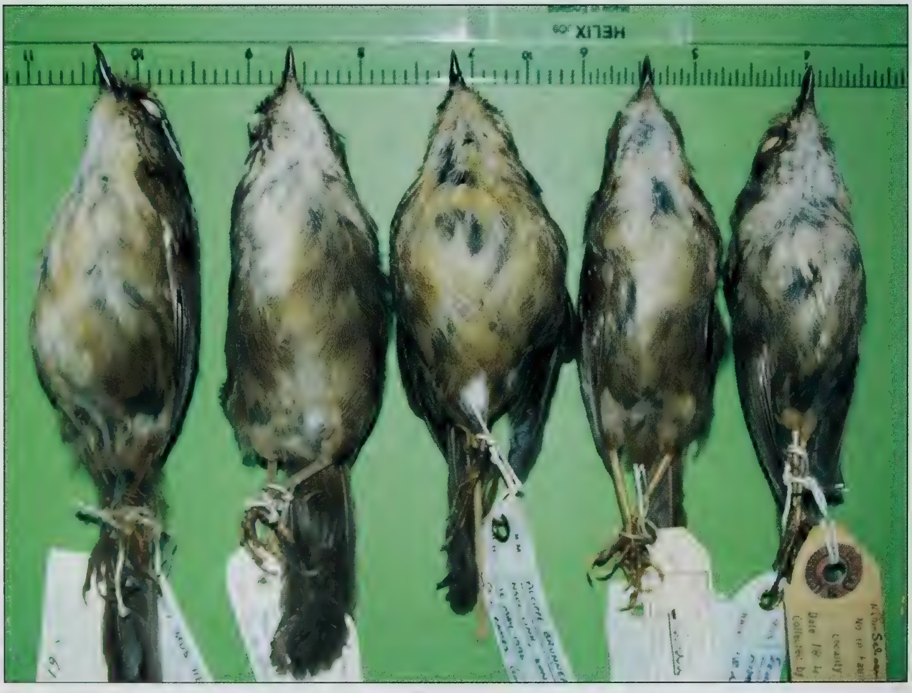

Figure 10. Ventral view of the holotype of *Alcippe (brunnea) dubia cui* (centre) together with (from left to right) *A. d. genestieri* BMNH 1930.7.16.208 and BMNH 1930.7.16.206, and *A. d. intermedia* BMNH 86.10.1.6282 and BMNH 1948.80.1686 (photograph by J. C. Eames).

Measurements (mm) and bare-part colouration. Holotype. Maxilla broken; tarsus 24; tail 60; wing 60; iris dark brown; bill black horn; legs yellow horn. ***Paratype.*** Maxilla broken; tarsus 23; tail 62; wing 60; iris dark brown; bill black horn; legs yellow horn.

Ecology and behaviour. A semi-terrestrial *Alcippe*. From the behaviour of the holotype and paratype they clearly represented a pair on territory. As judged by the condition of his gonads, the male was in breeding condition.

Habitat. Undergrowth in montane evergreen forest above c. 2,200 m asl.

Distribution. Known only from Mt Ngoc Linh, Kon Tum Province, Kon Tum Province.

Etymology. I name this taxon in honour of my colleague Nguyen Cu, who collected both the holotype and paratype. Nguyen Cu is co-author of *Chim Viet Nam* (Nguyen Cu *et al.* 2000).

Specimens examined. *A. d. genestieri*: BMNH 1930.7.16.206, 4 December 1929, male, Fan Si Pan, Vietnam; BMNH 1930.7.16.208, 23 November 1929, male, Sa Pa, Vietnam; BMNH 1924.12.21.140, 3 May 1924, male, Ngoi Tio, Vietnam; BMNH 1930.7.16.207, 24 November 1929, female, Sa Pa, Vietnam; BMNH 1924.12.21.169, 3 May 1924, female, Ngoi Tio, Vietnam; BMNH 1922.12.7.190, 13 December 1921, unsexed, Lichiang Range, Yunnan, China; BMNH 1923.11.11.207, September 1922, male, Lichiang Range, Yunnan, China; BMNH 1921.7.15.256, undated, unsexed, Lichiang Range, Yunnan, China; BMNH 1921.7.15.259, June 1918, male, Lichiang Range, Yunnan, China; BMNH 1933.11.13.374, June-July 1931, male, near Likiang, Yunnan, China; USNM 296578, 18 August 1923, male, Li Kiang Plain, Yunnan, China; USNM 276581, November 1923, male, mountains near Yangtza, Mekong Valley, Yunnan, China; USNM 276582, November 1923, male, mountains of Hofuping, Mekong Valley, Yunnan, China; USNM 276583, November 1923, male, mountains of Tseh Chung, Mekong Valley, China. *A. b. intermedia*: BMNH 86.10.1.6282, 19 February 1877, male, Mooleyit, Burma; BMNH 1948.80.1686, 18 April 1934, male, Mogali, Katha District, Burma; BMNH 1948.80.1685, 12 April 1940, female, Nattaung, Karenni District, Burma; BMNH 1948.80.1689, 18 April 1934, female, Mogali, Katha District, Burma; BMNH 1908.8.2.32, 18 April 1908, female, Bhamo, Burma (?).

Note: *Contra* Deignan (1964), I follow Inskipp *et al.* (1996) in elevating *Alcippe dubia* to specific rank, comprising the subspecies *A. d. mandelli*, *A. d. intermedia*, *A. d. genestier*, now with the addition of *A. d. cui*.

RUFOUS-BACKED SIBIA *Heterophasia annectans*

Two specimens collected from Cong Troi, when compared with 32 specimens including two topotypes of *H. a. annectans*, four topotypes of *H. a. mixta*, one topotype and two paratypes of *H. a. saturata*, and the holotype of *H. a. eximia*, belonging to the four recognized subspecies (Riley 1940, Deignan 1948, 1964), were sufficiently distinct to be named:

***Heterophasia annectans roundi*, subsp. nov.**

Holotype. BMNH registration number 1998.71.17, adult female collected at *c.* 1,500 m asl, Cong Troi (15° 14'N, 107° 41'E), 15 April 1998. Collected and prepared as a standard museum skin by LTT (Figs. 11 and 12).

Paratype. An additional female specimen was collected at Cong Troi on 14 April 1998 and is held at the BirdLife office in Hanoi, registration number 2001.8.11. The paratype was collected by LTT and prepared as a standard museum specimen by JCE.

Diagnosis. Colouration of the mantle and back of *H. a. roundi* is chestnut-orange, similar to nominate *H. a. annectans* (and a specimen assigned to *H. a. mixta* from north-west Vietnam) but paler than the chestnut-brown mantle and back of *H. a. saturata* and the four specimens of topotypic *H. a. mixta* examined (but see below under specimens examined). The back and upper tail coverts in *H. a. eximia* are black, as are the back and uppertail coverts of birds from Mooleyit in Burma assigned to *H. a. (davisoni) saturata*. The greater coverts of *H. a. roundi*, *H. a. mixta* and *H. a. saturata* are tipped chestnut-brown rather than orange-brown of *H. a. annectans*. The single specimen examined from north-west Vietnam was intermediate in this respect. The nape and upper mantle are black in *H. a. annectans*, *H. a. saturata* and *H. a. mixta*, as it is in *H. a. roundi* but the black does not extend so far down the mantle in *H. a. roundi*. Any differences in the extent of white streaking on the hind-crown are difficult to discern between these four subspecies. In *H. a. eximia* the white streaks on the hind neck are reduced but not "obsolete and hardly noticeable" as noted by Riley (1940). The underparts of *H. a. roundi* are white with the flanks tinged buff. In *H. a. mixta* the flanks, lower belly and vent are rich buff. In *H. a. saturata* the white underparts are washed grey and the vent and lower flanks show less buff than topotypical *H. a mixta* but more than *H. a. roundi*. The nominate form shows the most buff on the lower belly and vent (Figs. 11 and 12). *H. a. eximia* shows a few white barbs to the feathers of the supra-loral region and a few white feathers on the upper eye-lid (Riley 1940). The entire head is black in *H. a. annectans*, *H. a. mixta*, *H. a. saturata* and *H. a. roundi*.

Note: BMNH 1930.7.16.390 from Sa Pa, north-west Vietnam shows an upperpart colouration intermediate between topotypical *H. a. mixta* and the nominate form. Delacour (1951) noted that, although the population of *H. annectans* from the north of Indochina is assigned to the typical race from the Himalayas, specimens from Laos tend towards *H. a. mixta* (Ripley 1953). Furthermore, all USNM specimens assigned to *H. a. annectans* below would be better considered, I believe, as *H. a. mixta*. *H. a. davisoni*, which shows a greater extent of black on the mantle and reduced white on the nape, is probably a valid taxon worthy of re-instatement.

Measurements (mm) and bare-part colouration. Holotype. Maxilla 19; tarsus 29; tail 88; wing 78; iris dark brown; bill black horn, yellow basal half to lower mandible; legs yellow.

Paratype. Maxilla 19.5; tarsus 24; tail 88; wing 77; iris dark brown; bill upper mandible and distal half of lower mandible black, grading to yellow basal half; legs yellow.

Ecology and behaviour. Usually solitary or in pairs associating with mixed feeding parties. Confined to the canopy and middle storey.

Habitat. Lower montane evergreen forest.

Distribution. Known only from Cong Troi, Dak Glei District, Kon Tum Province, Vietnam.

Etymology. I name this taxon in honour of Philip D. Round, co-author of *Birds of Thailand* (*q.v.* Lekagul and Round 1991) and for his dedication in trying to conserve Gurney's Pitta *Pitta gurneyi.*

Specimens examined. *H. a. annectans*: BMNH 86.10.1.743, undated, unsexed, Sikkim, India; BMNH 1948.80.1897, 26 February 1934, male, Mogak, Myintada, Taung, Burma; BMNH 1939.12.8.182, 4 February 1939, male, Htingnan, Upper Burma; BMNH 86.10.1.745 (Topotype), undated, unsexed, Darjeeling, India; BMNH 86.10.1.748, undated, unsexed, Darjeeeling, India; BMNH 86.10.1.749 (Topotype), undated, unsexed, Darjeeling, India; USNM 330539, 22 April 1931, female, Doi Nang Ka, Thailand; USNM 335686, 15 July 1935, male, Doi Suthep, Thailand; USNM 335687, 15 July 1935, male, Doi Suthep, Thailand; USNM 311503, 15 December 1928, male, Doi Suthep, Thailand; USNM 335688, 13 July 1935, male, Doi Suthep, Thailand; USNM 336017, 18 February 1936, male, Doi Suthep, Thailand; USNM 334568, 12 August 1934, male, Doi Hua Mot, Thailand; USNM 330539, 26 April 1931, male, Doi Nang Ka, Thailand; USNM 330538, 10 November 1930, male, Doi Nang Ka, Thailand; USNM 330540, 10 November 1930, male, Doi Nang Ka, Thailand; USNM 330541, 12 November 1930, male, Doi Nang Ka, Thailand; *H. a. mixta*: BMNH 1930.7.16.390, 16 November 1929, female, Sa Pa, Vietnam; USNM 535015 (Topotype), 10 November 1965, female, Doi Pho Hom Pok, Thailand; USNM 535016 (Topotype), 15 November 1965, male, Doi Pha Hom Pok, Thailand; TISTR 53-1450 (Topotype), 24 Novembeer 1965, female, Doi Pha Hom Pok, Chang Mai, Thailand; TISTR 53-2622 (Topotype), 26 November 1965, female, Doi Pa Hom Pok, Chang Mai, Thailand; TISTR 53-2623, 6 February 1971, female, Dong Tak Ten, Chom Tong, Chang Mai, Thailand; TISTR 53-167, 18 January 1967, female, Doi Pui, Chang Mai, Thailand; TISTR 53-168, 23 January 1967, female, Doi Pui, Chang Mai, Thailand; NSMT K3481, 1 January 1959, female, Phu Kha, Pua District, Nan Province, Thailand. *H. a. saturata*: BMNH 1948.80.1899 (Topotype), 30 August 1940, male, Nattaung, Karenni District, Burma; BMNH 1948.80.1900, 05 November 1938, male, Yamthin District, Burma; BMNH 1900.12.20.382, 16 April1900, unsexed, Southern Shan States, Burma; BMNH 1903.12.24.386, undated, unsexed, Southern Shan States, Burma; *H. a. saturata* (*davisoni*): BMNH 86.10.1.761, 31 January 1877 (Paratype), male, Mooleyit, Burma; BMNH 86.10.1.760 (Paratype), 31 January 1877, male, Mooleyit, Burma. *H. a. eximia*: (holotype) USNM 359014, July 1939, female, Forests of Cam Ly, Vietnam.

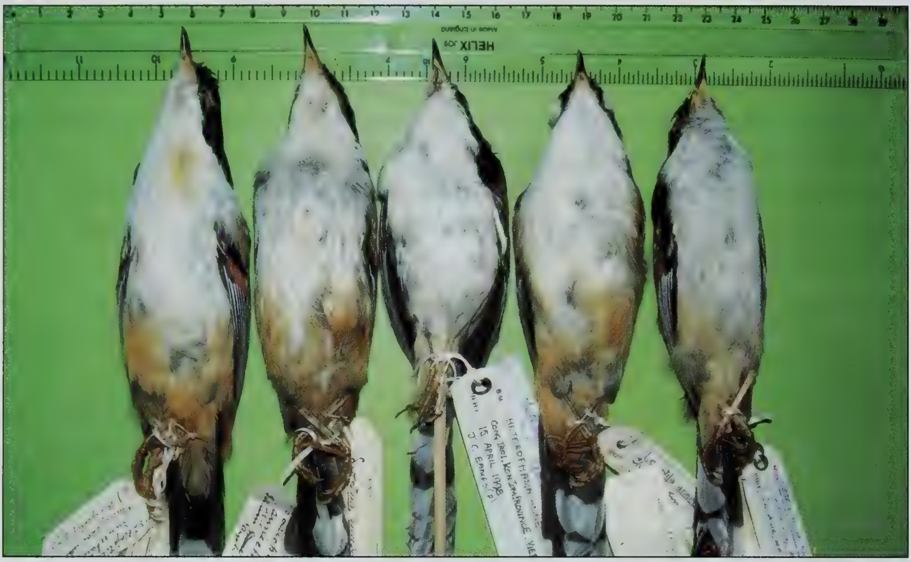

Figure 11. Ventral view of the holotype of *Heterophasia annectans roundi* (centre) together with (from left to right) *H. a. annectans* BMNH 86.10.1.748 (Topotype), BMNH 86.10.1.743, *H. a. mixta* BMNH 1930.7.16.390, *H. a. saturata* BMNH 1948.80.1899 (Topotype) (photograph by J. C. Eames).

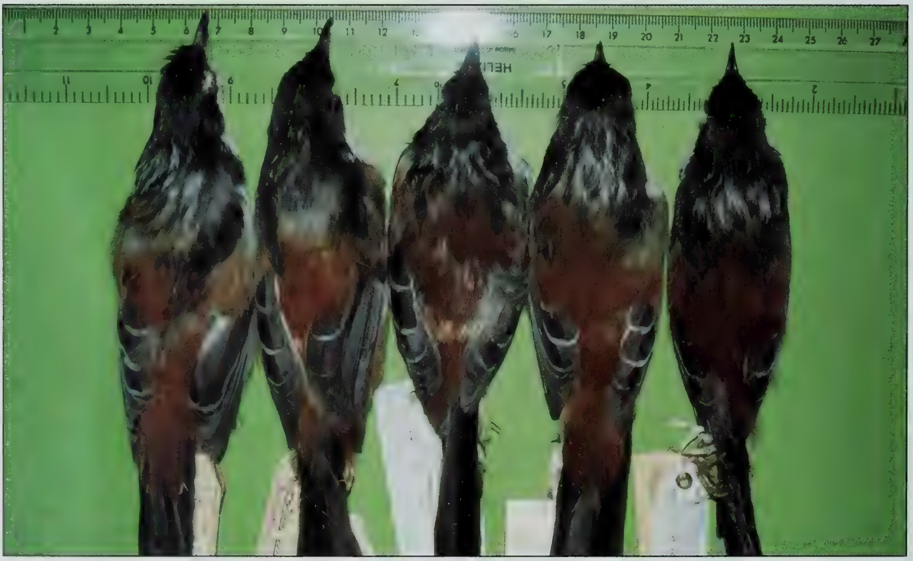

Figure 12. Dorsal view of the holotype of *Heterophasia annectans roundi* (centre) together with (from left to right) *H. a. annectans* BMNH 86.10.1.748 (Topotype), BMNH 86.10.1.743, *H. a. mixta* BMNH 1930.7.16.390, *H. a. saturata* BMNH 1948.80.1899 (Topotype) (photograph by J. C. Eames).

BLACK-HEADED SIBIA *Heterophasia melanoleuca*

Two specimens collected from Mt Ngoc Linh when compared with 16 specimens, comprising two topotypes of *H. m. robinsoni*, and four topotypes each of *H. m. engelbachi* and *H. m. tonkinensis*, the three subspecies with the closest geographical ranges (Deignan 1964, Delacour 1930, Rothschild 1921), were sufficiently distinct to be named:

Heterophasia melanoleuca kingi, subsp. nov.

Holotype. BMNH registration number 1997.7.11, adult male (one enlarged testis) collected at *c.* 2,200 m asl, Mt Ngoc Linh, 18 May 1996 by NC and prepared as a standard museum skin by NC (Fig. 13).

Paratype. An additional male specimen was collected on Mt Ngoc Linh, 28 March 1998, and is held at the BirdLife office in Hanoi, registration number 2001.8.12. The paratype was collected and prepared as a standard museum skin by LTT.

Diagnosis. *H. m. kingii* is generally intermediate between *H. m. tonkinensis* and *H. m. engelbachi* but shares some features with *H. m. robinsoni*. The grey wash on the breast in *H. m. kingi* is very similar to *H. m. engelbachi* and is almost undetectable in series, and less extensive than is shown by *H. m. tonkinensis*, in which it extends onto the sides of the breast and flanks, and *H. m. robinsoni* where it is confined to the

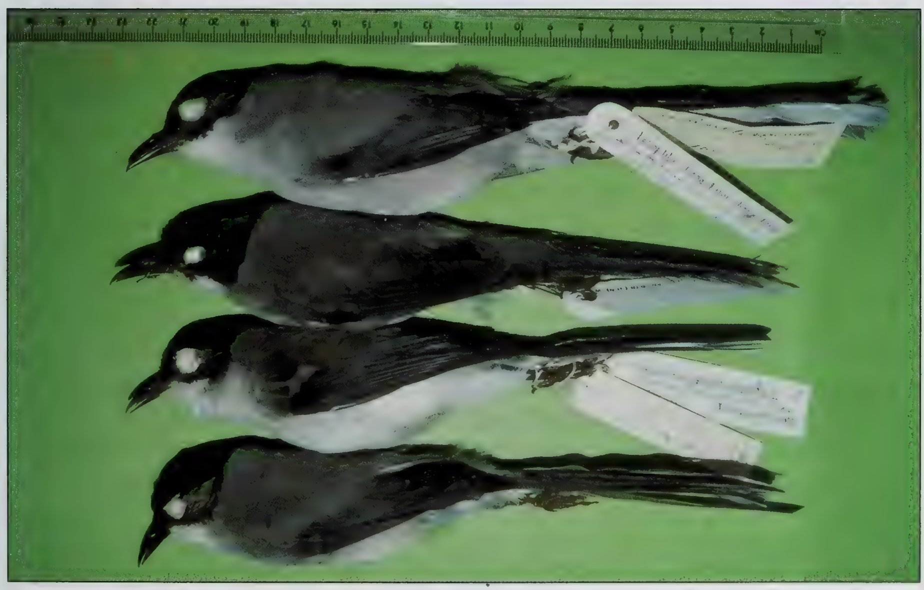

Figure 13. Profile view of the holotype of *Heterophasia melanoleuca kingi* (third from left) together with *H. m. robinsoni* BMNH1939.12.11.45 (Topotype), *H. m. engelbachi* BMNH 1932.5.14.155 (Topotype) and *H.m.tonkinensis* BMNH 1930.7.16.395 (Topotype) (photograph by J. C. Eames).

breast. The breast and belly *H. m. kingi* are white, washed slightly vinous as in *H. m. engelbachi*. The breast and belly appear whiter in *H. m. robinsoni*. In *H. m. kingi* the mantle is grey but with a faint purplish-brown (or drab mid-brown) wash on back and scapulars similar to but far less extensive than in *H. m. engelbachi.* Mantle and back colouration are therefore intermediate between the purplish-brown backed *H. m. engelbachi* on the one hand and the grey backed forms of *H. m. tonkinensis and H. m. robinsoni*, which are indistinguishable in series. The mantle in *H. m. kingi* is browner than in *H. m. tonkinensis* but greyer and less brown than *H. m. engelbachi*. The ear-coverts are uniformly black as in *H. m. engelbachi* and *H. m. tonkinensis*. *H. m. robinsoni* has grey-brown ear-coverts strongly streaked white. *H. m. kingi* additionally has a broken white eye-ring as in *H. m. engelbachi* and *H. m. robinsoni*, a feature absent in *H. m. tonkinensis* (Fig. 13). Reference was recently made to the diagnostic features of this subspecies in Robson (2000).

Measurements(mm) and bare-part colouration. Holotype. Maxilla 22; tarsus 30; tail 109; wing 95; iris dark brown; bill black; legs dark horn. ***Paratype***. Maxilla 23; tarsus 30; tail 111 mm; wing 96; iris dark brown; bill black; legs dark horn but recorded as pale black.

Ecology and behaviour. Usually in pairs, rarely in mixed feeding parties. Once seen associating with Black-crowned Barwing (Eames *et al*. 1999b). Usually found in the canopy and middle storey, especially feeding on boles on the trunk and larger branches. Quite vocal, its melancholy call is a characteristic forest sound.

Habitat. Found in montane evergreen forest above *c*. 2,000 m asl.

Distribution. Known only from Mt Ngoc Linh, Kon Tum Province, Vietnam.

Etymology. I name this taxon in honour of Ben F. King, senior author of *Birds of South-east Asia*, which was the first comprehensive bird field guide to the region (*q.v.* King *et al*. 1975).

Specimens examined. *H. m. robinsoni*: BMNH 1927.6.5.1069, 12 March 1927, female, Di Linh, Vietnam; BMNH 1939.12.11.45 (Topotype), 10 March 1939, female, Lang Bian, Vietnam; BMNH 1927.6.5.1065, 1 March 1927, female, Di Linh, Vietnam; BMNH 1928.6.26.1453, 8 August 1927, male, Entrenaus (?), Annam, Vietnam; BMNH 1927.6.5.1040, 11 March 1927, male, Di Linh, Vietnam; BMNH 1928.6.26.1454 (Topotype), 4 August 1927, male, Da Lat, Vietnam. *H. m. engelbachi*: BMNH 1932.5.14.153 (Topotype), 8 December 1931, male, Phou Kong Ntoul, Laos; BMNH 1932.5.14.158, 17 December 1931, male, Thaheng, Laos; BMNH 1932.5.14.155 (Topotype), 28 November 19/31,male, Phu Tonghoul (Phou Kong Ntoul), Laos; BMNH 1932.5.14.156 (Topotype), 12 December 1931, female, Phou Kong Ntoul, Laos; BMNH 1932.5.14.157, 3 December 1931, female, Pho Set, Laos; BMNH 1932.5.14.154 (Topotype); 10 December 1931, female, Phuo Kong Ntoul, Laos. *H. m. tonkinensis*: BMNH 1930.7.16.394 (Topotype), 24 November 1929, unsexed, O Quy Ho, Vietnam; BMNH 1930.7.16.395 (Topotype), 16 November 1929, unsexed, O Quy Ho, Vietnam; BMNH 1930.7.16.392 (Topotype), 7 November 1929, female, O Quy Ho, Vietnam; BMNH 1930.7.16.393 (Topotype), 27 November 1929, male, O Quy Ho, Vietnam.

STRIPE-THROATED YUHINA *Yuhina gularis*

Two specimens collected from Mt Ngoc Linh, when compared with 21 specimens, including four topotypes of *Y. g. gularis*, and five specimens of *Y. g. omeiensis*, the two subspecies with the closest geographical ranges in Indochina (Deignan 1964, Kinnear 1925), were sufficiently distinct to be named:

Yuhina gularis uthaii, subsp. nov.

Holotype. BMNH registration number 1998.71.18 adult male collected at *c.* 2,200 m asl, Mt Ngoc Linh, 7 April 1998 by LTT and prepared as a standard museum skin by JCE (Fig. 14).

Paratype. An additional male specimen was collected on Mt Ngoc Linh on 6 April 1998 and is held at BirdLife, Hanoi, registration number 2001.8.13. The paratype was collected by LTT and prepared as a standard museum skin by JCE.

Diagnosis. This form was examined with a series of 21 specimens assigned to *Y. g. gularis* and *Y. g. omeiensis*. These included birds representing the four forms synonymysed by Deignan (1964) under *Y. g. gularis*. Specimens were examined from the topotype locality (Nepal) as well as birds from western Yunnan previously described as *Y. yangiensis*, birds from western Yunnan and Burma, previously described as *Y. g. griseotincta*, and birds described as *Y. g. sordidor* in north-west Vietnam, including from Ngoi Tio, the type locality. No significant differences could be seen between these forms and I support Deignan's diagnosis. *Y. g. uthaii* is easily distinguishable from all these forms in having very broad dark brown throat streaking instead of having narrow throat streaking which the other taxa all show; additionally, the ground colour of the throat feathers being whiter and less pink or buff than in *Y. g. gularis*. The breast of *Y. g. uthaii* is pinkish buff, as in *Y. gularis* from Nepal, and both these forms lack the orange-pink breast of the birds from north-west Vietnam. There are no differences between these forms in the lower belly and vent colouration. There appearto be no significant differences in upperpart colouration but *Y. g. uthaii* and birds from Nepal show a slightly more olive tinge to the upperparts than birds from north-west Vietnam (Fig. 14). The distinctive throat pattern of this new subspecies was recently illustrated in comparison with *Y. g. gularis* (Robson 2000).

Measurements (mm) and bare-part colouration. Holotype. Maxilla 15; tarsus 22; tail 55; wing 72; iris dark brown; bill dark horn upper mandible, flesh horn lower mandible; legs orange flesh. ***Paratype***. Maxilla broken; tarsus 21; tail 58; wing 73; iris dark brown; bill dark horn upper mandible, flesh horn lower mandible; legs orange.

Ecology and behaviour. Usually found in small, noisy single species flocks moving rapidly through the canopy. The call is quite nasal and far carrying.

Habitat. Montane evergreen forest above *c.* 2,000 m asl.

Distribution. Known only from Mt Ngoc Linh, Kon Tum Province, Vietnam.

Etymology. I name this taxon in honour of Uthai Treesucon a leading conservationist and field ornithologist in Thailand.

Specimens examined. *Y. g. gularis*: BMNH 86.10.1.6574, undated, unsexed, Sikkim, India; BMNH 82.3.1.15, 1877, unsexed, Sikkim, India; BMNH 86.10.1.6575, undated, unsexed, Sikkim, India; BMNH 1950.10.43 (Topotype), 18 August 1950, female, Thangja, Nepal; BMNH 97.12.10.1331, May 1873, unsexed, Sikkim, India. *Y. g. (sordidor) gularis*: BMNH 1924.12.21.160 (Topotype), 19 June 1924, female, Ngoi Tio, Vietnam; BMNH 192412.21.164 (Topotype), 19 June 1924, male, Ngoi Toi, Vietnam; BMNH 1924.12.21.162 (Topotype), 20 June 1924, male, Ngoi Tio, Vietnam; BMNH 1930.7.16.345, 3 December 1929, male, Fan Si Pan, Vietnam; BMNH 1930.7.16.347, 14 December 1929, female, Fan Si Pan, Vietnam; BMNH 1933.11.13.771, October 1931, female, near Tengyueh, west Yunnan, China; BMNH 1921.7.15.340, undated, male, Tengueh, west Yunnan, China; BMNH 1905.9.10.367, 1904, unsexed, Mt Victoria, Chin Hills, Burma; BMNH 1905.5.9.10.354, 20 March 1904, unsexed, Mt Victoria, Chin Hills, Burma; AMNH 1905.9.10.355, 1904, unsexed, Mt Victoria, Chin Hills, Burma; BMNH 1932.12.10.85, 14 March 1931, female, Adung Valley, north-east Burma. *Y. g. omeiensis*: BMNH 1923.11.11.258, September 1922, male, Lichiang Range, Yunnan, China; BMNH 1922.12.7.258, 20 November 1921, unsexed, Lichiang Range, Yunnan, China; BMNH 1923.11.11.257, August 1922, female, Lichiang Range, Yunnan, China; BMNH 1922.12.7.259, 20 November 1921, male, Lichiang Range, Yunnan, China; BMNH 1922.12.7.264, 21 December 1921, male, Lichiang Range, Yunnan, China.

BLACK-THROATED PARROTBILL *Paradoxornis nipalensis*

Three specimens collected from Mt Ngoc Linh, when compared with nine specimens, including one topotype of *P. n. beauleiui*, from amongst the three subspecies with the closest geographical ranges in Indochina (Bingham 1903, Deignan 1964, Ripley 1953), were sufficiently distinct to be named:

Paradoxornis nipalensis kamoli, subsp. nov.

Holotype. BMNH registration number 1998.71.19, adult female collected at *c*. 2,200 m asl, Mt Ngoc Linh, 3 April 1998. Collected and prepared as a standard museum skin by JCE (Fig. 15).

Paratypes. Two additional specimens were also collected at *c*. 2,200 m asl on Mt Ngoc Linh, 3 April 1998. These comprise a male, which is deposited at the BirdLife office in Hanoi, registration number 2001.8.14, and a female BMNH, registration number 1998.71.20. Both specimens were collected and prepared as standard museum skins by JCE.

Diagnosis. *P. n. kamoli* is closest to *P. n. beaulieui* but shows some similarities to *P. n. feae* and *P. n.* (*verreauxi*) *craddocki*. *P. n. kamoli* has narrower black lateral crown stripes than *P. n. beaulieu*,i where the black lateral crown stripes are broad, becoming very broad behind the eye. In *P. n. kamoli* the lores are white, extending in front of and over the eye as a very narrow white supercillium. In *P. n. beaulieui* the lores are dark and the broader white supercillium extends noticeably to behind the eye. The crown and upper mantle in *P. n. kamoli* and *P. n. feae* are ginger-orange but in *P. n.*

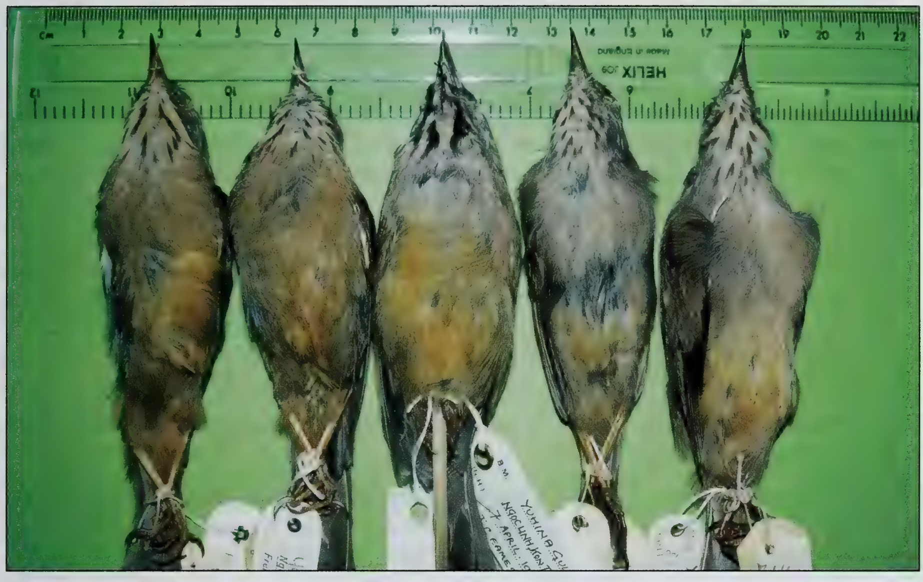
HELIX
B.M.
YUHINA GUL
NGOC LINH, KON T
7. APRIL. 19
J. C. EAME

Figure 14. Ventral view of the holotype of *Yuhina gularis uthaii* (centre) together with (from left to right) *Y. (sordidor) gularis* BMNH 1924.12.21.160 and BMNH 1924.12.21.164, and *Y. g. omeiensis* BMNH 1922.12.7.258 and BMNH 1922.12.7.259 (photogtaph by J. C. Eames).

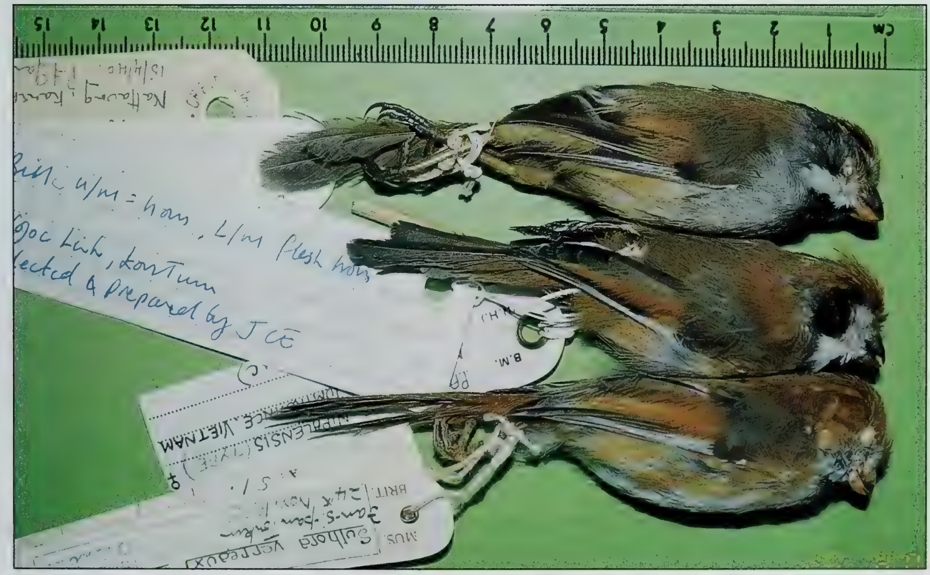
CM
Bill: u/m = horn, L/m flesh horn
Ngoc Linh, Kon Tum
Collected & Prepared by J CE
B.M.
VIETNAM
NIPALENSIS (TYPE)
Suthora verreauxi
BRIT

Figure 15. Profile view of the holotype of *Paradoxornis nipalensis kamoli* (centre) together with (from left to right) *P. n. feae* BMNH 1948.80.1978 and *P. n. (verreauxi) craddocki* BMNH 1930.7.16.299 (photograph by J. C. Eames).

beaulieui the crown and upper mantle are less bright and contrast less with the lower mantle. *P. n. kamoli* differs from *P. n. (verreauxi) craddocki* in having a much more extensive black throat and a circular black ear-covert patch, whereas the ear-coverts in *P. n. craddocki* are orange. *P. n. feae* differs from *P. n. kamoli* in having broad black lateral crown stripes, ear-coverts black suffused grey and the absence of white on the face, except for a broad white malar stripe and on the breast where it is replaced by grey (Fig. 15). The distinctive head pattern of this new subspecies was recently illustrated in comparison with *P. n. beaulieui* and *P. n. feae* (Robson 2000).

Measurements (mm) and bare-part colouration. Holotype. Maxilla 9; tarsus 17; tail 53; wing 49; iris dark brown; bill upper mandible horn, lower mandible flesh horn; legs purple flesh. ***Paratypes.*** Specimen number 2001.8.14: Maxilla 9.5; tarsus 21; tail 47.5; wing 47; iris dark brown; bill upper mandible grey horn, lower mandible flesh horn; legs flesh horn. Specimen number BMNH 1998.71.20: Maxilla 7.5; tarsus 18; tail 52; wing 48; iris dark brown; bill upper mandible grey horn, lower mandible pink horn; legs flesh horn.

Ecology and behaviour. Usually forages in noisy, small single species flocks that move rapidly through the forest undergrowth.

Habitat. Found in the bamboo understory and shrub layer of montane evergreen forest above *c.* 2,000 m asl.

Distribution. Known only from Mt Ngoc Linh, Kon Tum Province, Vietnam.

Etymology. I name this taxon in honour of Kamol Komolphalin, a leading conservationist and Thailand's foremost bird artist and co-illustrater of a *Field guide to the birds of Thailand* (*q.v.* Lekagul & Round 1991).

Specimens examined. *P. n.* (*verreauxi*) *craddocki*: BMNH 1924.12.21.202, 6 May 1924, female, Ngai Tio, Vietnam; BMNH 1.12.21.203, 20 June 1924, male, Ngoi Tio, Vietnam; BMNH 1930.7.16.299, 24 November 1929, male, Fan Si Pan, Vietnam; BMNH 1930.7.16.298, 19 November 1929, female, O Quy Ho, Vietnam. *P. n. beaulieui*: Paris Museum 360 (Topotype) 26 December 1938, male, Phu Kobo, Xieng Khonang, Laos. *P. n. feae*: BMNH 1948.80.1978, 15 April 1940, male, Nattaung, Kerreni District, Burma; BMNH 1905.8.16.194, May 1901, unsexed, Kauri Kachin District, Burma; BMNH 1948.801977, 12 April 1939, female, Nattaung, Burma; BMNH 1948.801976, 17 April 1940, male, Nattaung, Burma.

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Notes on the extinct Kosrae Starling *Aplonis corvina* Kittlitz, 1833

by Julian P. Hume

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The Starlings of the genus *Aplonis*, comprising 24 known species, are virtually confined to the islands of the south-western Pacific, occurring on the mainland only on the Malay peninsular in the west, southern Vietnam in the north, and the tip of northern Australia in the south (Feare & Craig 1998). Six species of the genus are widespread, 8 species inhabit groups of islands, and the rest are endemic to single islands or island pairs; apart from 3 species, all are almost entirely lowland birds. Three of the endemic species are now extinct: Norfolk and Lord Howe Starlings *A. fusca* (2 ssp, Norfolk Island and Lord Howe Island), Mysterious Starling *A. marvornata* (Mauke, Cook Islands) and Kosrae Starling *A. corvina* (*Kosrae, Caroline Islands), with other endemic species being rare and restricted (Greenway 1957, King 1981, Fuller 1987, Feare & Craig 1998). One of the most spectacular species was the Kosrae, Kosrae Island or Kosrae Mountain Starling *A. corvina*, which has not been seen since the 1830s and is known only from 5 specimens. The little that is known about the ecology of this species is based entirely on the work of Kittlitz (1832, 1835, 1858), the only biologist to have seen the bird in life and the collector of all the known specimens.

The Kosrae Starling has been described as a large, red-eyed, glossy black bird with a long curved bill and long tail, and illustrated accordingly (Kittlitz 1832, 1835, Greenway 1957, Day 1981, Fuller 1987). However, during a visit I made to the Russian

*Kosrae Island was formerly known as Kusaie Island, and originally termed Uulan in error (Finsch 1881)

Academy of Sciences, St Petersburg in November 1998, it was readily apparent that the skins there do not fully accord with the published descriptions or any published illustrations. The skins represent juvenile, sub-adult and adult plumage, and are strikingly different from each other. Furthermore, the library of the Russian Academy of Sciences contains a copy of one of Kittlitz's overlooked early publications (Kittlitz 1832) which is not readily available elsewhere and which contains information about the birds' ecology. These Kittlitz notes about the Kosrae Starling are here translated verbatim and presented with a full description of plumage patterns of *A. corvina*. In addition, morphological/biogeographical comparisons are made between *A. corvina* and other *Aplonis* species.

Three specimens, which are housed in the Russian Academy of Sciences, St. Petersburg, were the first individuals known. Mees (1964), who discovered, described and photographed two further *A. corvina* specimens, housed in the collection of the Rijksmuseum van Natuurlijke Historie, Leiden, increased the total number of known museum specimens to five. The morphology of the St. Petersburg and Leiden specimens is also compared in this paper.

Discovery: Kittlitz's description and the bird's ecology

Friedrich Heinrich von Kittlitz (1799-1874), sailing on the corvette *Senjawin*, surveyed areas of the Bering Sea and the Caroline Archipelago (Kittlitz 1858, Steinbacher 1954, Mearns & Mearns 1992). Kittlitz reached the Caroline Archipelago on 1 November 1827, returning north via the Bonin Islands (Kittlitz 1858, Mearns & Mearns 1992). During these visits to both the Caroline and Bonin Islands, Kittlitz collected a series of birds, some never seen again. Included in his collection were specimens of *A. corvina*, taken from Kosrae Island, the most easterly of the Caroline group (Fig. 1). He collected the first example on 15 December 1827 in the area of Lyal, another on 21

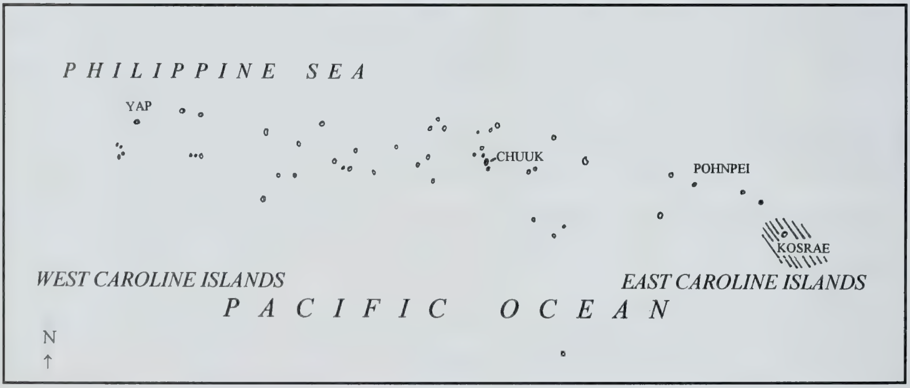

Figure 1. The Caroline Archipelago with Kosrae Island (shaded) situated furthest right. Scale 1 cm = *c*. 370 km.

December in the mountains, and a juvenile on 29 December in mountain woods also near Lyal; the last day of collecting on Kosrae was 30 December 1827 (Kittlitz 1858, Mees 1964). Kittlitz only recorded taking three specimens, but five skins are known to exist. As he was working for the Russians, he originally deposited three *A. corvina* specimens, as well as 300 other birds plus 200 field drawings, in the Russian Academy of Sciences, St. Petersburg (Mearns & Mearns 1992), from where some were subsequently dispersed to Frankfurt and Berlin (Hartert 1891). Kittlitz material was dispersed via Johann Georg Wilhelm Brandt (1794-1856), who was the brother of Prof. Dr. Johann Friedrich von Brandt (1802-1879), curator of the Imperial Museum, St. Petersburg (Steinheimer pers. comm). Based on his field notes and drawings, Kittlitz had three accounts and two illustrations of *A. corvina* published, although it was not until 1832 that he published detailed collecting notes; the field drawings were later engraved and coloured by himself. The text accompanying the plate in Kittlitz (1835) translates as follows:

> "9) *Lampothornis corvina* n.
> From Uulan. This bird is found much less often on this island than *Lampr. opaca* (Lichtenstein) or *Turdus columbinus*. Gm. L. which are very common,
>
> It looks similar to the bird discussed above [*Aplonis (Lampr.) opaca*] except for its size, beak length and style of living etc. It [*Aplonis (Lampr.) opaca*] is a sociable bird, although it does not like large flocks. It likes inhabited areas and eats mostly fruit (particularly bananas). This species [*Aplonis (Lampothornis) corvina*] lives deep in the wooded region in the centre of the island and is just about the only bird occasionally to be seen here. It eats small animals, larger insects and lizards etc., which it swallows whole. It also seems occasionally to eat fruit, the stones of which have been found in its stomach. It [the stomach] is relatively smaller and more muscular than the other species. The mating call of this solitary bird is loud and consists of a single, often repeated tone. The young (probably in their first year) have very different feathers, so that one is led to believe that they are a completely different sort of bird. They are all over yellowy white with black/brown speckles, especially on their upper half. The iris is light brown. I would doubt if they belonged to this species, if I hadn't once shot a black bird that had white feathers still visible from the transition period. Both sexes have the same plumage, but the female seems smaller, and its black feathers are less shiny, although the males also differ here, probably due to their age.
>
> Description. The feathers over the cere are similar to *Turdus columbinus* although more velvety. The beak and feet are black. The brow is purple-red. The feathers are shiny with a faint steel-green and purple shimmer. The tail is wedge-like - although the outside feathers are considerably shorter (Kittlitz 1835 pp. 7-8)."

It was in Kittlitz (1832) that the first illustration of *A. corvina* was published, but it received little attention and almost no circulation due to a shortage of funds; only

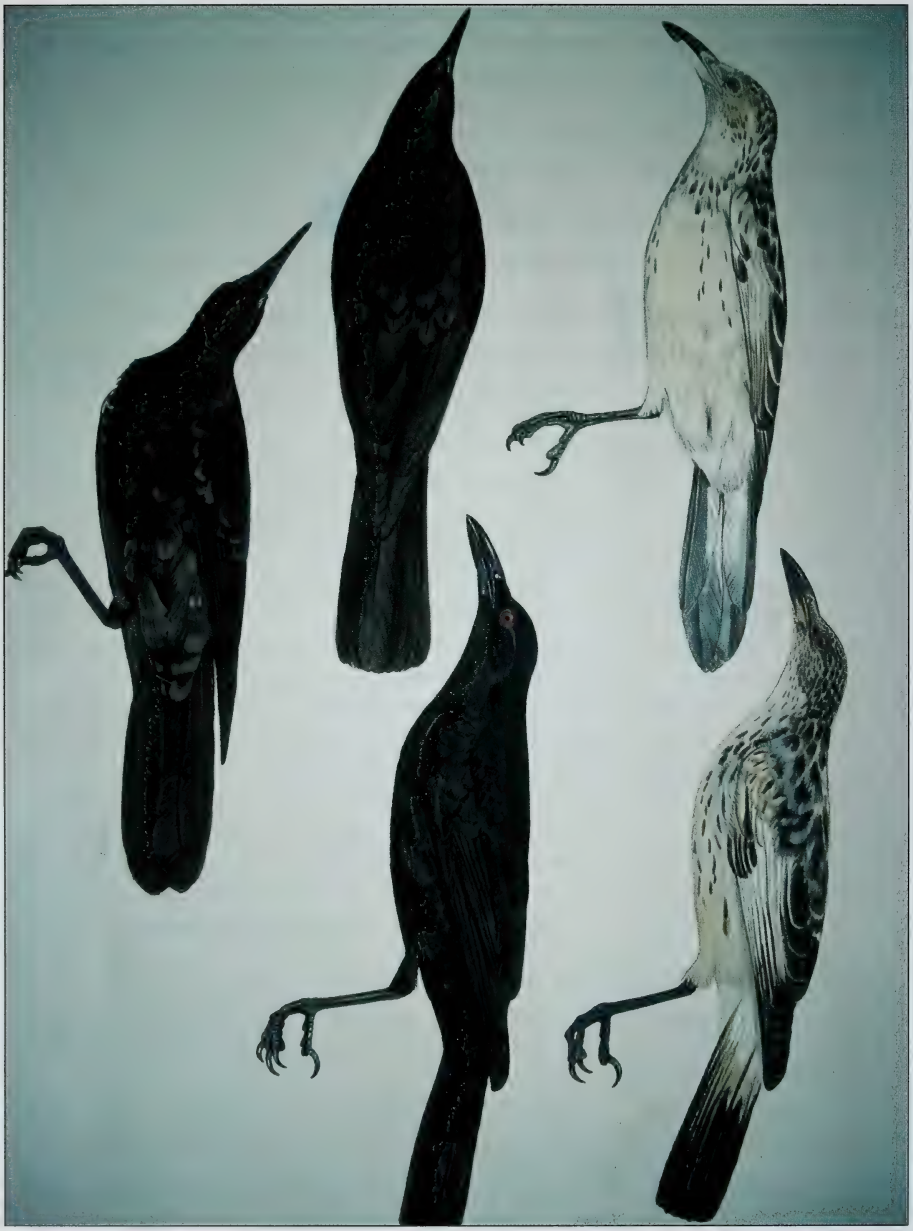

Figure 2. The five surviving specimens of Kosrae starling *Aplonis corvina* (top right) Leiden juvenile RMNH 90381; (top left) Leiden adult RMNH 90380; (lower right) St. Petersburg juvenile 138169; (lower left) St. Petersburg adult 138168; (centre left) St. Petersburg sub-adult 138167.

a few copies were ever printed (Mearns & Mearns 1992). It refers briefly to the text of 1835 (as the 1835 publication preceded the 1832 publication) with some variation as follows:

> "Fig 3. - This is a new species, found on the island of Uulan, and was called *Lamprothornis corvina.* Written details and life-size picture must have appeared in the newest memoirs of the Academy of St. Petersburg [referring to Kittlitz 1835].
>
> It has similarities to fig 2 [*Aplonis opaca*], but there are slight differences due to its animal-like food; big insects such as crickets and similar, and little lizards make up its main diet. It sometimes complements its diet with fruits thus its stomach is smaller and more muscular than that of other species. This is a solitary bird living in the deepest mountainous forest regions avoiding man. The young are yellowy white, with black/brown spots. Adult males and females are both black (Kittlitz 1832 pp. 12-13)."

It is evident from Kittlitz's notes that he was a fairly keen observer and recorded details with some care. The illustration in Kittlitz (1835) reproduced *A. corvina* life size and included a line drawing of the bifurcated tongue.

Description of specimens

(All specimens measured by and illustrated (Fig. 2) by the author)

St Petersburg specimens

Juvenile (138169)

Basal colour whitish-cream, whiter on the back and bases of primaries/secondaries. The under belly and under tail coverts more buff. Chocolate-brown speckling on head, neck and shoulders, each feather edged with buff. Tail and primaries chocolate-brown, lighter brown on back. Breast speckles with dark centres, fading to buff-brown with white edges. Under tail mid brown distally, more rufous proximally. Upper tail white at the base merging into buff then chocolate brown at the tips. Very fine buff speckles on throat, chin and face. Feathers without gloss. Bill pale yellow at base merging into dark brown/black towards tip. Edges of bill soft. Tarsus dark brown/black. Iris recorded as light brown. Measurements (mm): wing (from bend of wing to tip of primary) 140, tail (base of undertail coverts to tip) 100, total length (bill tip to tail tip) 270, bill length (tip to base of cranium) 31, bill depth (at point of distal end of operculum) 10, tarsus 38.7.

Sub-adult (138167)

Overall colour black, browner on underside. Buff or white flecks and edgings on underside, lower back, secondaries and wing coverts; very distinctive on undertail coverts. Iridescent green/purple (depending on light) on upperparts, less on underside, with no gloss on primaries or tail. Bill and tarsus entirely black. Iris recorded as bright red. Measurements (mm): wing 142, tail 100, total length 280, bill length 32.9, bill depth 10, tarsus 38.

Adult (138168)
Completely glossy black with predominantly green iridescence but also purple, particularly on the head and neck depending on the light. Wings and tail iridescent green and purple but much less extensive and distinct; primaries without gloss. Bill and tarsus entirely black. Iris recorded as bright red. Measurements (mm): wing 145, tail 105, total length 290, bill length 33.5, bill depth 10, tarsus 38.2.

A note accompanying the St. Peterburg specimens describing the label history translates as follows:

> "In the Zoology Institute are the following specimens: No. 138167 - first year, which has on some black feathers of undertail, belly and shoulders (small upper wing coverts) rather worn light brown edgings;
>
> No. 138168 - adult; No. 138169 - young bird in nestling plumage. The labels of the author are the same: "No. 102, *Lamprothornis n. sp*. Ualan, v. Kittlitz." Later, *n.sp.* was crossed out by a member of staff of the Zoological Museum, Academy of Sciences and written " *corvina* " (Neufeldt 1978 p.107)."

Leiden specimens

Juvenile (female?) RMNH 90381
Basically similar to the St. Petersburg specimen of a juvenile. Mees (1964) recorded the bill as less curved than for the adult and the edges of the rostum/maxilla softer, not fully keratinised. Base of the bill light-coloured as in the St. Pertersburg specimen. Iris colour not recorded. Measurements (mm): wing 137, tail 97, total length 292, bill length 31, bill depth 7.5 (damaged), tarsus 35.

Adult (male?) RMNH 90380
Similar to St. Petersburg specimen but black with a light-blue and rose gloss; the wings iridescent green. Bill all black. Iris colour not recorded. Measurements (mm): wing 136, tail 104, total length 250, bill length 30, bill depth 9, tarsus 33.5.

Provenance of the Lieden specimens

The two Leiden specimens and their history remain a mystery. A specimen was recorded as being seen in Frankfurt (Steinbacher 1954) but subsequently disappeared. As far as it is known, only Kittlitz saw and collected this species. He never sexed the St. Petersberg specimens, yet the Leiden specimens are labelled as male and female (Mees 1964). However, my examination of these specimens reveals that Coenraad Jacob Temminck (his name is hand written on the labels), founder and first director of the Rijksmuseum van Natuurlijke Historie, had, based on colouration, sexed the specimens after they had been skinned. This sexual determination certainly cannot be relied on. Furthermore, Temminck not only knew the foremost zoologists of his day personally, he exchanged (apart from a pair) every other duplicate bird and bought many specimens for the Rijksmuseum in the middle of the Nineteenth Century, particularly from Germany (Holthius 2001). It is quite possible that Temminck obtained two *A. corvina* specimens directly from Kittlitz and Kittlitz had actually collected more specimens than he mentions in his notes. His voyage was poorly funded and it would have been financially beneficial to collect extra specimens for later dispersal.

However, the possibility also exists that the specimens were exchanged from the Frankfurt collection. Until the 1840s, Edward Rüppell (1794-1884), curator of Frankfurt museum, exchanged duplicate material of high importance, which included Kittlitz material and types. As Frankfurt possessed at least one specimen of this species before WWII - E. Hartert (1891) listed one in the catalogue of the collection as donated by Baron v. Kittlitz - excess material may have been exchanged with Temminck at Leiden; Rüppell did so at least with other specimens (Steinheimer pers. comm.). Unfortunately, this sixth specimen of *A. corvina*, supposedly residing in Frankfurt (Fuller 2001) has disappeared (Mayr pers. comm.). The complete skin collection was evacuated and dispersed to several different 'safe deposits' around Frankfurt during World War II and Steinbacher (1954) presumed the specimen was lost as one of these deposits was destroyed by bombing.

Relationships

Aplonis starlings are primitive, generally unspecialised and form an island complex of fruit eating arboreal species that occur only on oceanic islands and adjoining continental masses (Amadon 1943, 1956, Beecher 1978). Some members of the genus share a number of characteristics which indicate relict or long-isolated populations, e.g. the lack of gloss in some species (a retention of the juvenile characteristic), bill morphology, large size, sexual dimorphism and limited distribution (Feare & Craig 1998). Table 1 and Fig.3 give a comparative summary of morphological, biogeographical and behavioural characteristics of members of the genus, aspects of which are discussed below.

Size

A. corvina is equivalent in size to the larger members of the genus, namely Long-tailed Starling *A. magna,* Samoan Starling *A. atrifusca*, and Large Glossy Starling *A. grandis*. Interestingly, all these large species have limited distribution, confined to island groups or single islands and have probably been isolated for a long time. Other members of the genus are all small to medium-sized birds.

Gloss

Gloss reduction has generally occurred in the *Aplonis* spp. with restricted distribution, but also in the widespread but isolated Polynesian Starling *A. tabuensis*, suggesting a long isolation from their fully glossed congeners (Feare & Craig 1998). However, full gloss also occurs in isolated endemic populations, notably the Kosrae *A. corvina*, and Long-tailed Starling *A. magna*. If these species have indeed been isolated for a

TABLE 1

Comparison of morphological, biogeographical and behavioural characteristics of the genus *Aplonis* (after Feare & Craig 1998, Hume *pers. obs*). F = fruit, I = insects, V = vertebrates

Species Numbers refer to species in Fig. 1.	**Total length (cm)**	**Gloss**	**Sexual dimorphism**	**Juvenile**	**Food**	**Migrant**	**Distribution**
A. atrifusca **22**	30	yes (reduced)	no	dull brown	F	no	island group
A. brunneicapilla **12**	21-32 (inc. tail)	yes	size, less gloss	duller, inconspicuous white streaks on underside	F	no	island group
A. cantoroides **10**	17-19	yes	no	dull, dark brown above, white with dark streaks below	F	yes	widespread
A. cinerascens **23**	21	yes (reduced)	no	?	F + I	no	endemic
A. corvina **9**	27-29	yes	size?, less gloss?	cream and white, speckled/ streaked black and brown	V+I+F	no	endemic
A. crassa **3**	20	yes	no	dull, dark brown above, white with dark streaks below	F	no	endemic
A. dichroa **15**	18-21	yes (reduced)	no	browner, less gloss	F	no	endemic
A. feadensis **11**	20	yes	no	duller, scaly on underparts	I	no	island group
A. fusca **20**	17-18	yes (reduced)	no	?	F	no	endemic
A. grandis **14**	25-29	yes	no	duller	F	no	island group
A. insularis **16**	19	yes	no	dull, no gloss	?	?	endemic
A. magna **5**	28-41 (inc. tail)	yes	no	?	F	no	endemic
A. mavornata **24**	18	yes (reduced)	?	?	?	?	endemic
A. metallica **13**	21-26	yes	no	dull, dark brown above, white with dark streaks below	F	yes	widespread
A. minor **2**	18	yes	no	dull, underparts white streaked with black	F	yes	widespread
A. mysolensis **4**	20	yes	no	brown above, streaked below	F	no	island group
A. mystacea **6**	18-19	yes	no	dull, dark brown above, white with streaks below	F	no	island group
A. opaca **7**	24	yes	size, plumage	dull, streaked underparts	F	no	widespread
A. panayensis **1**	17-20	yes	duller	paler, buffish and streaked below	F	yes	widespread
A. pelzelni **8**	16	yes (reduced)	no	paler	F?	no	endemic
A. santovestris **17**	17-18	yes (reduced)	no	?	F	no	endemic
A. striata **18**	18	yes	size, plumage	?	?	no	island group
A. tabuensis **21**	17-21	yes (reduced)	no	?	F	no	widespread
A. zealandica **19**	19	no	no	paler	F	no	island group

long period, it appears that gloss retention may occur just as readily as gloss reduction and therefore cannot be diagnostic of isolated or relict populations.

Sexual dimorphism

The sexes of most species of *Aplonis* are similar, but sexual dimorphism does occur in four species. Size differentiation (smaller females) and/or female plumage patterns are distinct in Norfolk and Lord Howe Island Starlings *A. fusca,* Micronesian Starling *A. opaca*, and Striated Starling *A. striata*. Less distinct dimorphism occurs in the White-eyed Starling *A. brunneicapilla,* with females being less glossy and smaller. Kittlitz (1835) mentioned female *A. corvina* as being smaller and less glossy in his field notes. Unfortunately, as the original labels for the sexed Leiden specimens are missing, and Kittlitz never sexed the St. Petersburg specimens, any sexually dimorphic characteristics must be approached with caution, especially as the Leiden juvenile female is larger than the adult male in wing, bill and tarsus length.

Bill morphology

Bill morphology varies in the genus from small and pointed (Pohnpei Mountain Starling *A. pelzelni,* Mysterious Starling *A. mavornata*) through broad (Yellow-eyed Starling *A. mystacea*), to large and heavy (Samoan Starling *A. atrifusca*, Kosrae Starling *A. corvina*). However, distributional groupings of *Aplonis* have little in common (Fig. 3). As the largest bills belong to Samoan Starling and Kosrae Starling,

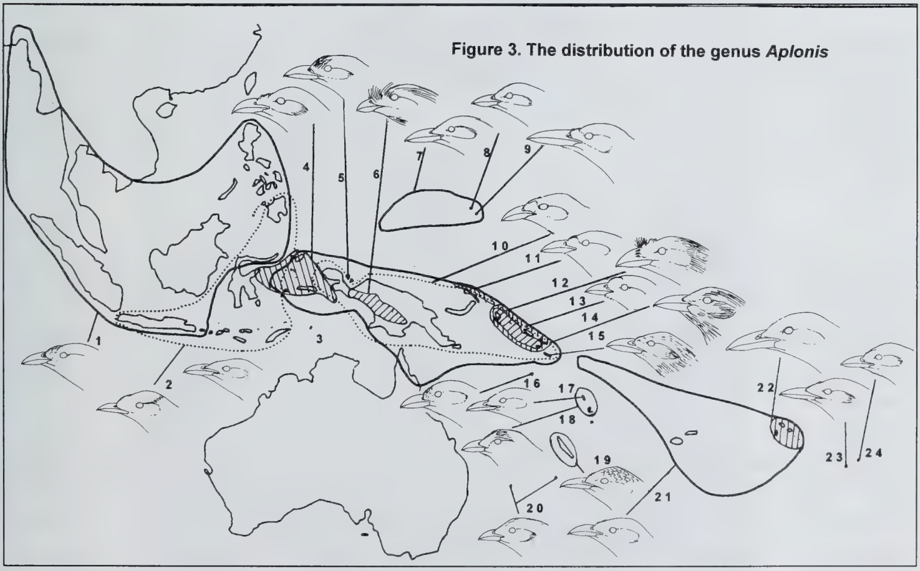

Figure 3. The distribution of the genus *Aplonis* and the bill morphology of the 24 species. Original distribution map from Feare & Craig (2000); drawings of heads by the author. Refer to Table 1 for key to numbered species.

of widely separate Somoa and Carolines respectively, a possible relationship between these two species based on this character and large size (Mees 1964, Day 1981), seems unlikely. Furthermore, in the Samoan Starling, the plumage is brown and almost without gloss and the juveniles are dull versions of adults. Probably due to prolonged lack of recognition, the Leiden specimens were actually deposited with Samoan Starling *A. atrifusca* (Mees 1964), hence the long period for which they went unrecognized.

In Kittlitz's illustration (1835, tab. 9,) the bill as depicted is far too slender (Fig. 4), a basis on which Sharp (1890) doubted the generic placement of *A. corvina* (see also Hartert 1891).

Juveniles

Distinct juvenile plumage patterns occur in all species to some degree and juvenile *Aplonis* are generally dull versions of the adults and/or have marked plumage differences with increased black/brown streaking on white or beige underparts (Table 1). However the degree of differentiation shown in juvenile *A. corvina* is unique in *Aplonis*, and in all other starling genera. It has also been suggested that the juvenile plumage described above represents a leucistic condition (Feare pers. comm.). The second juvenile individual from Leiden verifies that this plumage was not atypical, and the intermediate plumage recorded by Kittlitz lends support to the juvenile/adult moult being a transition between the "pied" juvenile and adult plumages. However, there is still a possibility that the Leiden juvenile was a sibling of the St. Petersburg juvenile, and thus both may be aberrant offspring.

The White-eyed Starling *A. brunneicapilla,* Singing Starling *A. cantoroides,* Tanimbar Starling *A. crassa,* Shining Starling *A. metallica,* Short-tailed Starling *A. minor,* Island Starling *A. mysolensis,* Yellow-eyed Starling *A. mystacea,* Micronesian Starling *A. opaca*, and Asian Glossy Starling *A. panayensis* share, with *A. corvina,* distinctive streaked underparts, but this feature bears no apparent relationship to distribution (Table 1).

Conclusions

Morphologically, the Kosrae Starling was not only one of the largest members of the genus *Aplonis* but also had a specialised, almost crow-like heavy bill. Its diet, consisting mainly of animal matter, may have differed from the predominantly frugivorous diet of other *Aplonis*. Its stomach was noted as being smaller and more muscular than *A. opaca*, a possible adaptation for a diet in which animal matter predominates. However, this evidence is based on only 5 specimens; Common Starlings *Sturnus vulgaris* have larger stomach and intestines in the winter, when more vegetable matter is consumed (Feare 1984). It was the most frequent bird encountered in the mountains when first discovered but already comparatively rare. Kittlitz (1835) described mating calls during December, but as fledged young were taken, it was more likely that he heard loud contact calls. *A. opaca* fledge after 21-25 days, becoming independent shortly afterwards (Feare & Craig 1998), and if the fledging period of the Kosrae Starling was similar, this suggests that the juvenile *A. corvina* collected were fledged by late November. That the juveniles were recently fledged is further supported by the soft rhamphotheca of both juvenile specimens, a characteristic of a very young bird (Mees 1964). The sub-adult specimen indicates that the adult gloss was not achieved at least until the following year, a phenomenon not uncommon in other Sturnidae (Feare & Craig 1998).

Relationships

Relationships within *Aplonis* are complex and confusing, with morphological variation and former distribution difficult to determine. *Aplonis* starling distribution appears to represent complex pulses of range expansion, colonization and probable extinction, sometimes resulting in isolated or sympatric populations. In the Kosrae Starling, differences from other members of its family in diet, bill shape, and distinctiveness of juvenile/adult plumage suggest suggest specialisations indicative of prolonged isolation.

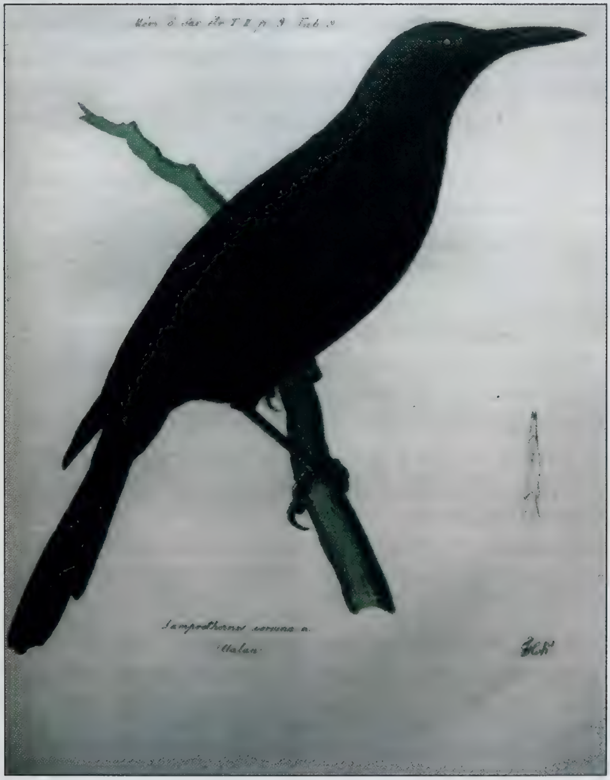

Figure 4. The first published illustration of the Kosrae Starling *Aplonis corvina*, including (middle right) the bifurcated tongue.

Aplonis and other problematic island genera, e.g. *Dicrurus*, would certainly benefit from DNA analysis to provide independent evidence of their phylogenies.

Competition with Aplonis opaca?

A. corvina was sympatric with the smaller, widespread Micronesian Starling. Amadon (1956), King (1981), Fuller (1987) and Feare & Craig (1998) have suggested that *A. corvina* was restricted to the mountains and was possibly displaced/out-competed in the lowlands by the more recent arrival of *A. opaca*, which is a lowland bird. Areas of habitation favouring *A. opaca* have certainly increased since the Second World War due to anthropogenic activity (Baker 1951). Range expansion of *A. opaca* may have also occurred on Kosrae towards the end of the 19th Century, as it was during this time that the Carolines suffered an upsurge in deforestation (King 1981). The endemic Pohnpei (formerley Ponape) Mountain Starling, a species now restricted to the mountains, originally occurred all over the neighbouring island of Pohnpei (Fig.1) and a nearby atoll (Baker 1951, King 1981, Buden 1996, Feare & Craig 1998). This species is also sympatric with *A. opaca* and it is therefore unlikely that the montane restriction of *A. corvina* was due to competition with *A.opaca.* It is most likely that *A. corvina* required undisturbed forest, and that the extent of this was the main factor in determining its distribution.

Extinction

The factors that caused the extinction of *A. corvina* remain a mystery. Otto Finsch, who visited Kosrae in February 1880, was familiar with the bird, having seen the St. Petersburg specimens (erroneously stating two instead of three) and noted the distinctiveness of the species (Sharpe 1890). Kosrae Island, lying furthest east within the Caroline Archipelago, had not been overly exploited as it lay off the main shipping routes (Mees 1964), although the other Caroline Islands were generally known to shipping (Fuller 1987). It was still densely wooded at the time of Finsch's visit and the human population numbered only 300 individuals (Finsch 1881), so the mountainous central region would surely still have provided refuge. Finsch thought that it still existed and noted that the human population, already decimated by the influence of western contact, did not venture into the mountains anymore (Sharpe 1890); Finsch himself never searched the interior (Mees 1964).

Rats have been cited as a probable cause of extinction (Greenway 1957, Fuller 1987). Ships were often careened on shore and rats could easily escape. It appears that they were present in some numbers on Kosrae, as Kittlitz (1858) noted them as 'being common and found in banana plantations' even as early as 1827. The wide-ranging *A. opaca* appears to be able survive, despite rat predation, on Kosrae and other islands; it is still commonly found in the lowlands (Feare & Craig 1998). *A. opaca* nest in hollow trees and this, coupled with its aggressive nature, may help reduce rat predation (King 1981, Feare & Craig 1998) but it still is heavily preyed upon by rats (Baker 1951, Greenway 1957). This species is more susceptible to the tree climbing Black Rat *Rattus rattus* and the Pacific Rat *R. exulans*, than the more terrestrial

Brown Rat *R. norvegicus*. No assessment can be made with respect to rat predation on breeding Kosrae Starlings as no nests were ever recorded. Generally, *Aplonis* spp. nest in tree cavities, with only two species building pendulous nests. *A. pelzelni* nests in tree cavities, as does the other Mountain Starling, *A. santovestris* (Feare & Craig 1998) and similar nesting requirements may have applied to *A. corvina*.

The Kosrae Starling, being specialised, shy and retiring, must have been very susceptible to human disturbance and hunting, and tree-climbing rats may have been nest predators and/or competitors for food. Also, introduced avian disease, a factor that proved so devastating to the avifauna in the Hawaiian Islands, may have been partly responsible. It is more than likely that a combination of events was to blame for the extinction of *A. corvina*.

Whatever the circumstances surrounding its extinction, the Kosrae Starling is only known from the five individuals in Leiden and St. Petersburg, all of which are syntypes (Mees 1964). It was only ever seen and recorded in the wild between the 15 and 30 December 1827 by F. H. von Kittlitz. It was still possibly alive and overlooked in the 1880s, as Finsch never penetrated the interior. It was certainly extinct by 1931, as the interior was thoroughly searched by F.J.Coultas of the Whitney Expedition of the American Museum of Natural History (Greenway 1957) and other Japanese expeditions (Mees 1964). It is the good fortune of science that the Kosrae Starling was collected and recorded in life, albeit for just 15 days.

Acknowledgements

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First record of the Rufous Potoo *Nyctibius bracteatus* and in-flight drinking by the Semi-collared Nighthawk *Lurocalis semitorquatus* in French Guiana

by Nigel Cleere & Johan Ingels

Received 21 March 2001

Between 6 September and 6 October 2000, we conducted nocturnal surveys at several localities around the village of Saül (53°12´W, 03°35´N) in central French Guiana. Records of two Caprimulgiform species are of particular importance and are documented here.

RUFOUS POTOO *Nyctibius bracteatus*

One heard on 20 September from primary rainforest along the Creek Limonade, *c.* 5 km south of Saül. It called almost continuously between 0515 and 0600 h, with pauses of up to 30 seconds or more between each set of notes. The call, an 'owl-like' series of bubbling *boobooboo* notes that trailed off and descended in pitch at the end of each series, matched the description given for this species by Cleere (1998) and was immediately identified by playback of a recording taken from Ranft & Cleere (1998). A second bird was heard calling briefly at dusk on 22 September by NC, from primary rainforest on the outskirts of Saül. Although it has been speculated that this secretive species might occur in French Guiana (Tostain *et al* 1992) these appear to be the first records for the country.

SEMI-COLLARED NIGHTHAWK *Lurocalis semitorquatus*

One seen by NC at 1840 h on 22 September, in good light *c.* 10 min before dusk, at a small, algae-infested pond just inside primary rainforest alongside Saül airstrip. It flew around the pond before descending to the surface, where it drank by dipping its bill into the water. Whilst drinking, it held its wings up in a V above its body and its tail up and slightly fanned. It then flew around the pond again, gained height and disappeared over the forest. Approximately 5 minutes after the bird disappeared from view, a second (or the same?) bird appeared and also drank from the pond. Both birds appeared long-winged, short-tailed and frequently glided for short distances, their silhouette and flight not appearing bat-like as suggested by Cleere (1998). At close range and in such good light, both birds also appeared very dark, but the narrow white tips to the second and third tail feathers (R2 and R3) were conspicuous as the tail was often fanned in flight. Although drinking in flight has been recorded for several *Chordeiles* nighthawks and *Caprimulgus* nightjars (Cleere 1998), these records appear to be the first for this particular species.

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Specimen record of Short-toed Snake Eagle for Kenya is invalid

William S. Clark & Dennis R. Paulson

Received 3 April 2001

The only published record of Short-toed Snake Eagle *Circaetus gallicus* for Kenya is a specimen collected near Lake Turkana (formerly called Lake Rudolf) in 1968 (Owre & Paulson 1968). The specimen was deposited in the Field Museum of Natural History (Chicago) as FMNH 369299 (Fig. 1).

WSC recently examined the specimen and determined that it was not an adult Short-toed Snake Eagle but a similar-appearing second plumage Black-breasted Snake

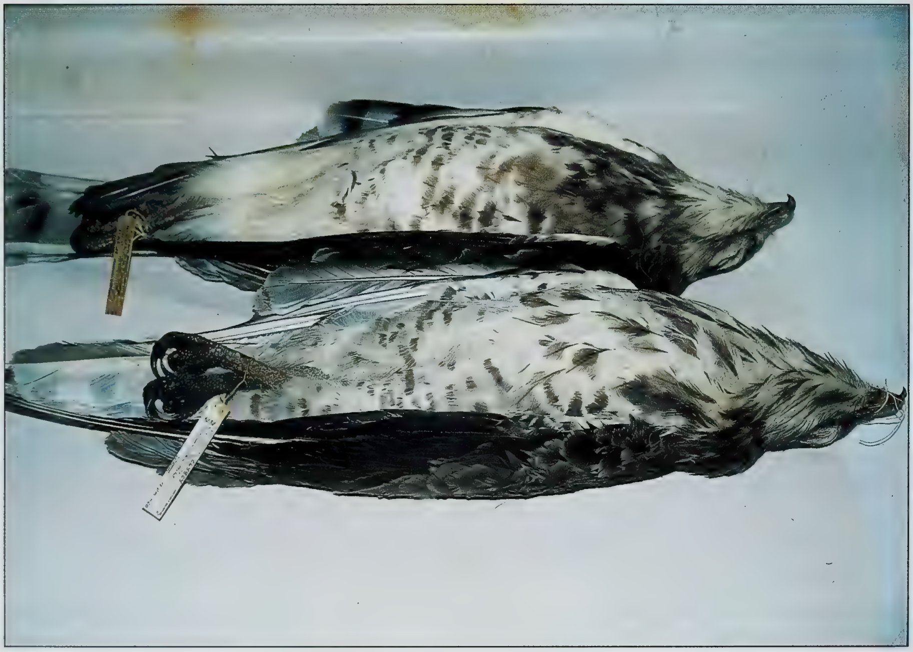

Figure1. Specimen of first plumage Black-breasted Snake Eagle collected at Lake Turkana (upper) compared to an adult Short-toed Snake Eagle (lower). Note the new black breast feathers and the more prominent black banding on the new secondary and undertail of the Black-breasted Snake Eagle.

Eagle *C. pectoralis*. This plumage had not been described at the time this eagle was collected. It was not known until Newman (1983) described and illustrated it; however, he called it an alternate juvenile plumage. Maclean (1993) calls this plumage a second year plumage. Both Newman (1983) and Maclean (1993) have illustrations of perched eagles in this plumage that show how similar they are in appearance to adult Short-toed Snake Eagles.

The specimen also strongly resembled adult Short-toed Snake Eagles but differed in having some new black breast feathers and a mix of new adult secondaries with wide black subterminal bands and brownish juvenile secondaries. The secondaries of adult Short-toed Snake Eagles have a wide dusky terminal band and a narrower black subterminal band. The uppersides of the specimen appear identical to those of adult Short-toed Snake Eagles.

Clark (2000) discussed in more detail the separation of these two similar plumages and the field identification of the large *Circaetus* snake eagles. Clark (1999) discussed taxonomic problems in the genus caused by failure to recognize the second plumage of Black-breasted Snake Eagles at nests and confusing them with other species.

Acknowledgements

We thank the curators of the Field Museum of Natural History for permission to examine this specimen.

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Correction of the type locality of the Pennant-winged Nightjar *Macrodipteryx vexillarius* (Caprimulgidae)

by Nigel Cleere & Michael Walters

Received 7 April 2001

The genus *Macrodipteryx* contains two Afrotropical nightjar species, both of which are migratory and have been recorded outside their normal ranges as vagrants (Fry *et al.*, 1988, Cleere 1998, 1999). The Standard-winged Nightjar *Macrodipteryx longipennis* breeds in West and Central Africa, and generally moves north in the non-breeding season. The Pennant-winged Nightjar *Macrodipteryx vexillarius* has a more southerly breeding range and moves north to 'winter' in Central Africa. Surprisingly, the type locality for both species is stated to be Sierra Leone, which is within the normal range for the Standard-winged Nightjar, but almost at the extreme limit of vagrancy for the Pennant-winged Nightjar. The type locality for the latter requires discussion and correction (Cleere 1998).

The Pennant-winged Nightjar was illustrated and described by Gould (1838), who also stated 'Little is known respecting this singular species further than it inhabits the islands lying between those of Bourbon and Madagascar; that it is numerous on the shores of the Red Sea and in the Island of Scutra'. Warren (1966) listed specimen 1855.12.19.63 in the British Museum (Natural History) as the holotype, adding that it was an adult male (relaxed mount) from Sierra Leone, collected by J. Barlow and purchased of the Zoological Society of London. This specimen has been the subject of confusion ever since the British Museum received it, and here we aim to clarify the issue.

The oldest label attached to the specimen, which seems to have escaped the attention of earlier authors, is a small piece of cardboard with the registration number and the name of the species on one side, and on the other, the words 'Africa. dupl.' The latter word is clearly an abbreviation of 'duplicate', a term long in use in the Museum to denote a specimen without data and therefore of little or no importance. The entry in the museum register states '63. *Caprimulgus vexillarius* Gld. Type. Red Sea?' and appears to have been written in the same hand, therefore suggesting that it was a single entry which was probably undertaken in 1855. Some early bird register entries were copied from the General Zoology registers, but the collection containing this particular specimen was not. Although the specimen label confirms that it was regarded as a duplicate, it was entered in the register as the type of the species. The locality of 'Red Sea?' is probably taken from the list of locations given by Gould, although why this was chosen over the other localities is unknown. The specimen is a relaxed mount, which had been on display in the galleries prior to its transfer to the type collection. As it was not included in a list of specimens in the collection by

Hartert (1892), it was presumably removed from the gallery some time after then, but the precise time of its removal is unknown.

The second label on the skin is the one that has been quoted and discussed, and was evidently added after the specimen was removed from the gallery. The data on this label, which were supposedly copied from beneath the stand of the mounted specimen, state 'Jas. Barlow Esq., Sierra Leone. Orig. descr. J. Gould Esq., under the name of *Caprimulgus vexilla'*. Following *vexilla* is an almost illegible word 'Lirg' or 'Ling' which looks as if it was intended to be the name of an author, although Sherborn (1922) indicates that no taxon of any bird has ever been described with the specific name *vexilla*.

This specimen and its collection locality were eventually discussed by Sclater & Mackworth-Praed (1919, p. 659 footnote). They drew attention to the information on the second Museum label, which they interpreted as meaning that the specimen had been collected in Sierra Leone, and saw no reason why it should not be accepted as the type of the species and the locality accepted as the type locality. However, even accepting the transcribed information on the label as correct, there is no evidence to link the specimen to Gould. 'Orig. descr. J. Gould Esq.' is more plausibly interpreted as meaning that Gould first described the species, but not that he did so on the basis of this specimen; we have no evidence that it was ever in his possession. The identity of 'Jas. Barlow' has eluded our investigations, as nobody of this name appears in any biographical source available to us. It is not possible, therefore, to say with any certainty that the ascription on the label linking his name with that of Sierra Leone means that the specimen originated there. Many early specimens are known to have been mislabelled, or to have been obtained from a location different from their country of origin.

The type locality of Sierra Leone for the Pennant-winged Nightjar has certainly created problems for subsequent authors. Bannerman (1933) stated 'It is also recorded from Sierra Leone but doubt has been cast on this record', whilst Peters (1940) and Fry *et al.* (1988) simply followed Sclater & Mackworth-Praed (1919) in quoting Sierra Leone as the type locality. That Barlow's specimen originated in Sierra Leone seems increasingly unlikely. Had Gould had a specimen from this country in front of him, it is inconceivable that he would not have mentioned this in his description. Even more significantly, he stated 'the general structure of this species is precisely the same as that of the *Macrodipteryx africanus,* Swains. and it doubtless represents that bird on the opposite side of the African continent'. The range for *M. africanus* (= *M. longipennis*) was described by Swainson (1837) as West Africa, and we do not believe that Gould would have said his new species occurred on the opposite side of the continent if his only specimen also came from West Africa.

We conclude from the foregoing that there is no evidence to support the view that Barlow's specimen is the type of *Macrodipteryx vexillarius*, or that Barlow actually collected his specimen in Sierra Leone. Barlow may not even have been the collector; he may merely have owned the specimen. We believe that the whereabouts of the specimen illustrated and described by Gould remains unknown and possibly no longer exists. It is unclear why Gould gave the range for this nightjar as islands between Bourbon (=Reunion) and Madagascar, the shores of the Red Sea and the Island of Scutra (=Socotra ?), as it does not appear to have been recorded anywhere in those areas. The bird depicted and described by Gould was an adult male with full pennants and was probably a breeding bird. The post-breeding moult of this species suggests that birds in this plumage are unlikely to be found at the extreme limits of vagrancy (Cleere 1998). In the absence of a valid type specimen, we suggest 'southern Africa' as an acceptable type locality for *Macrodipteryx vexillarius*.

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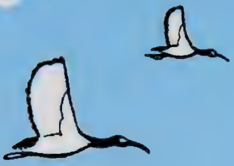

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The cash bar is open from **6.15 pm**, and a buffet supper, of two courses followed by coffee, is served at **7.00 pm.** (A vegetarian menu can be arranged if ordered at the time of booking). Dinner charges are currently **£18.00.** Informal talks are given on completion, commencing at about 8.00 pm.

FORTHCOMING MEETINGS

5 November - Professor Ian Newton - *'Population limitation in birds: a review of the experimental evidence'*. Ian began his ornithological career by studying the ecology and feeding behaviour of finches, supervised by David Lack at the University of Oxford. He then moved to work with the Natural Environment Research Council in Edinburgh, studying first waterfowl and then birds of prey. For more than 25 years, he conducted a population study of the Sparrowhawk *Accipiter nisus* in south Scotland. He has authored about 250 papers in the scientific literature, and several books, including *Finches* (1972), *Population ecology of raptors* (1979), *The Sparrowhawk* (1986), and more recently, *Population limitation in birds* (1998). He was elected Fellow of the Royal Society in 1993, and awarded an OBE for 'services to ornithology' in 1999. He is a past President of the British Ecological Society and is current President of the British Ornithologists' Union.

Applications to the Hon. Secretary by **23 October** please.

3 December - Jon Hornbuckle - *'The birds of Beni Biological Station, Bolivia'*. Jon took early retirement in 1993, after a career in scientific and technical management with the steel industry, to pursue his wildlife interests full-time. He has extensive experience as an ornithological fieldworker and ringer, in many parts of the world, but especially South America where he spent six summers ringing birds in the Beni Biological Station and conducted surveys of threatened cloud forests in NW Ecuador and NE Peru. He has lectured extensively on these experiences, including to the Club on Peru, in January 2000. He is also author of a considerable number of papers and reports.

Applications to the Hon. Secretary by **19 November** please.

Future meetings, in 2003. The following **Tuesdays** have been booked for eight meetings:
21 January, 25 February, 25 March, 29 April (AGM), 24 June, 23 September, 4 November and 2 December.

Overseas Members visiting Britain are especially welcome at these meetings, and the Hon. Secretary would be very pleased to hear from anyone who can offer to talk to the Club, in 2003, giving as much advance notice as possible - please contact: Michael Casement, Dene Cottage, West Harting, Petersfield, Hants, GU31 5PA, UK. Tel/FAX: 01730-825280 (or Email: mbcasement@aol.com).

Bulletin of the BRITISH ORNITHOLOGISTS' CLUB

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CLUB NEWS

Membership News. We regret to announce the recent death in Australia of V.J. Wood, Member (1985-2002).

BOU Meetings. The following meetings have been arranged:

28 November 2002. Birds and Public Health, at the British Academy, Carlton House Terrace, London

11-16 April 2003. Long-term studies of birds, in collaboration with the EGI annual student conference, Oxford University.

For further details see the BOU website: www.bou.org.uk and for bookings contact steve.dudley@bou.org.uk

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ANNUAL GENERAL MEETING

1. The Annual General Meeting of the British Ornithologists' Club was held in the Sherfield Building, Imperial College, London SW7 on Tuesday 30 April 2002 at 6 p.m. with Dr C.F. Mann in the Chair. Apologies had been received from Sir David Bannerman, Phil Belman, Professor Bob Cheke, Francis Stone (*Hon. Archivist*), Amberley Moore, Mary Muller, and Paul Salaman. 15 Members were present. The Minutes of the Annual General Meeting held on 1 May 2001, which had been published (*Bull. Brit. Orn. Cl.* 121: 148-149), were approved and signed by the Chairman.
2. **Chairman's report.** The chairman summarised the main points shown in the Trustees' Annual Report for 2001, drawing attention to the further development of the partnership with the British Ornithologists' Union with the formation of a joint publications committee, the continuing enhancement of the *Bulletin* and the BOC website, and the good progress made with electronic archiving of back-numbers of the Bulletin.

   He thanked members of the Committee for their support, the Trustees of the Herbert Stevens Trust for their management of the Club's investment portfolio, and paid tribute to Francis Stone who had indicated that he was seeking a successor as *Hon. Archivist.*
3. **Trustees' Annual Report for 2001.** The *Hon. Secretary* pointed out that the Annual Report was now an integral part of the Annual Accounts, copies of which were before all Members present, and would be published in the June issue of *Bulletin* 122 (2). He drew attention to some of the highlights of this report, and called for any questions. There were none.

   The Annual Accounts for 2001. The *Hon. Treasurer* presented the accounts for the year ended 31 December 2001, and drew attention to the salient features, which were detailed in the paragraphs on finance in the Trustees' Report of Activities and Review of the Year.

   The adoption of the Accounts was proposed by Michael Casement, seconded by David Griffin, and approved by all present.
4. **The *Bulletin.*** *The Hon. Editor* said that the Committee had approved a total of 320 pages for Vol. 122. This would enable him to clear a back-log of interesting papers. Crowes had done an excellent

job for printing Vol 121, though there had been a problem sending authors their additional copies and separates. This was now being done from Tring, with the kind co-operation of Effie Warr.

5. **Club Publications.** Tom Gladwin said that good progress was now being made with the *Bird Atlas of Uganda*, and publication was now hoped for before the year-end. The BOC/BOU Joint Publications Committee (JPC) was due to meet shortly to review the progress of this and other publications.

6. **Election of Officers and Committee.**
The Chairman said there were no proposed changes to the Committee; Bob Scott had served his four years, but had agreed to extend for a further year to allow time for a successor to be found.
Subsequent to last year's AGM, Revd. Tom Gladwin had kindly agreed to serve as *Vice-Chairman*, for one year. But Rule (5) made provision for a term of four years only, so it had been agreed that he continued to serve in this capacity until such time as the future succession and direction of the Club was determined.
There being no other nominations to the offices of Secretary and Treasurer, Commander M.B. Casement was re-elected *Hon. Secretary*, and D.J. Montier re-elected as *Hon. Treasurer*.

7. No other items for discussion had been notified in accordance with Rule (12) and the meeting closed at 6.31 p.m.

The 908th meeting of the Club was held on Tuesday 26 March, at 6.15 pm, in the Sherfield Building Annexe, Imperial College, and was attended by 28 Members and 9 guests.

Members present were: Dr C.F. MANN (*Chairman*), Miss H. BAKER, Sir David BANNERMAN Bt, Captain Sir Thomas BARLOW Bt. DSC. RN, P.J. BELMAN, K.F. BETTON, Cdr M.B. CASEMENT RN, D.R. CALDER, Dr M.J. CARSWELL, Dr R.J. CHANDLER, Professor R.A. CHEKE, Dr R.A.F. COX, Revd. T.W. GLADWIN, A. GIBBS, D. GRIFFIN, C.A.R. HELM, J.P. HUME, R.H. KETTLE, S.W. LOWE, G.P. JACKSON, J.A. JOBLING, D.J. MONTIER, Mrs A.M. MOORE, Mrs M.N. MULLER, R.J. PRYTHERCH, N.J. REDMAN (*Speaker*), R.E. SCOTT and P.J. SELLAR.

Guests attending were: R. BAKER, Mrs C.R. CASEMENT, J.A. EYRE, Mrs J.M. GLADWIN, P.J. MOORE, Mrs M. MONTIER, R. RIDDINGTON, I. PACKER, and R. WHISTLER.

On completion, Nigel Redman gave an illustrated talk entitled *Two decades of birding in the former Soviet Union.*

Siberia, source of many of our vagrants, has long held a strong fascination amongst European birdwatchers but inaccessibility and the Cold War ensured that until *c*. 20 years ago its ornithological delights remained shrouded in mystery.

Nigel co-led his first Birdquest bird tour to the USSR in 1983. The earlier visits were subject to many restrictions and travel and subsistence facilities were poor. Birdwatchers were treated with suspicion and were accompanied everywhere by English-speaking Intourist guides. However, much has now improved.

The former USSR covered almost one sixth of the world's landmass, extending 12,000 km from east to west. Habitats range from tundra and ice in the far north, through massive areas of taiga forest, to deserts and mountains in the south. All tours start in Moscow, situated in the mixed forest zone of European Russia. The birding within the environs of the city is good, with a distinct eastern European feel.

The starting point for a visit to the central Caucasus, bordering Europe and Asia, is Tbilisi, in Georgia. In the picturesque foothills, deciduous forests give way to dwarf rhododendron scrub on the Krestovvy Pass. Specialities of the higher areas include Caucasian Snowcock, Caucasian Black Grouse, Wallcreeper, Güldenstadt's Redstart, Mountain Chiffchaff, Green Warbler and Great Rosefinch.

In the Kopet Dag mountains, Turkmenistan, close to the border of Iran, See-see Partridges, Pale Rock Sparrows and Grey-necked Buntings are found amongst commoner central Asian species such as Red-headed Bunting. The famous Repetek reserve, in the searingly hot Kara Kum desert, supports Desert Warbler, Desert and Saxaul Sparrows and the endemic Pander's Ground Jay. Moving east through Uzbekistan to Tashkent, and into the higher altitudes of the Tien Shan, Kyrgyzstan, Himalayan Snowcock, Eversmann's Redstart, Stoliczka's Tit-Warbler, Himalayan Rubythroat, and four species of accentor are found, amongst many other species. In northern Kazakhstan, the fast disappearing steppes are home to Black and White-winged Larks, Sociable Plovers, Black-winged Pratincoles, Booted Warblers, and a host of wetland species.

The southern end of Lake Baikal, around Irkutsk, was for many years the main base for seeing Siberian specialities. Pallas's Warblers, Siberian Blue Robins, and Yellow-breasted Buntings are common and most other Siberian vagrants to Europe breed here, e.g. Siberian and Eye-browed Thrushes, Lanceolated and Pallas's Grasshopper Warblers, Siberian Rubythroat, and Radde's and Dusky Warblers. Asian Dowitchers breed in the Selenga Delta, and south from Ulan Ude to the Mongolian border Mongolian Lark and Blyth's Pipit occur. In recent years, the north end of Baikal has been opened up, allowing access to higher altitude habitats.

In the Far East, the forests and wetlands of the Amur basin around Khabarovsk provide additional species such as Forest Wagtail and White-throated Rock Thrush, while the forests of Ussuriland are home to specialities like Scaly-sided Merganser and Blakiston's Fish Owl. Straddling the Chinese border, Lake Khanka holds Red-crowned and White-naped Cranes, Oriental Stork and the striking Reed Parrotbill.

Sakhalin Island, in the Sea of Okhotsk, immediately to the north of Japan, has to two endemics, Sakhalin Warbler and Nordmann's Greenshank. In early June, good wader passage sometimes includes breeding-plumaged Spoon-billed Sandpipers, and pelagic excursions can produce a number of Pacific seabirds.

Despite the huge political and social changes in the former Soviet Union, the region remains of great interest to ornithologists, and is more accessible than before.

The 909th meeting of the Club was held Tuesday 30 April 2002, in the Sherfield Building Annexe, Imperial College following the Annual General Meeting at 6.30pm.

Members present were: Dr C.F. MANN (*Chairman*), Miss H. BAKER, Captain Sir Thomas BARLOW Bt. DSC. RN, I.R. BISHOP, Cdr M.B. CASEMENT RN, Dr. R.J. CHANDLER, Professor C.J. FEARE, F.M. GAUNTLETT, The Rev. T.W. GLADWIN, D. GRIFFIN, J.P. HUME, J.A. JOBLING, D.J. MONTIER, N.J. REDMAN, R.E. SCOTT, P.J. SELLAR, S.A.H. STATHAM and F.D. STEINHEIMER Guests attending were: Ms G. BONHAM, Mrs C.R. CASEMENT, Dr J.H. COOPER, Mrs M.H. GAUNTLETT, Mrs J.M. GLADWIN, Mrs M. MONTIER, and A. MULLER.

After dinner, a series of short talks was given by Members on subjects of topical interest; the following is a brief synopsis of the main points presented:

The Revd. Tom Gladwin summarised observations made in **Singapore** with his wife Janet, son Julian, and others from 6 to 27 December 2002. Mainly thanks to local consultant and guide Subaraj Rajathural, they observed 174 of the 391 species in his latest *Field checklist to the birds of Singapore,* published privately (2001). On an important migration route through Indonesia and the Malay Peninsular, Singapore contains a number of fine nature reserves including Bukit Timah, the area of primary rainforest where Alfred Russell Wallace began his Malaysian studies in 1854, and the 530 ha MacRitchie Catchment Forest, which holds many obligate forest species. The following give an indication of bird diversity in Singapore: Sungei Buloh Reserve mangroves – over 2,000 Pacific Golden Plover *Pluvialis fulva*, an Eastern Curlew *Numenius madagascariensis* and two Asian Dowitchers *Limnodromus semipalmatus*; pools at Lorong Halus - Little Grebe *Tachybaptus ruficollis*, Lesser Whistling Duck *Dendrocygna javanica* and Greater Spotted Eagle *Aquila clanga;* Pulau Ubin - Oriental Pied Hornbills *Anthracoceros albirostris* (recent re-colonist) and Straw-headed Bulbuls *Pycnonotus zeylanicus*; Breakwaters and Reclamation Land at the SW of the island - 23 species of waders, including Malaysian Plover *Charadrius peronii.* Many of these species are listed under various categories of threat, Greater Spotted Eagle and Straw-headed Bulbul globally. In addition, introduced Tanimbar Cockatoos *Cacatus goffini* (near threatened) were observed at nest holes in urban trees; self-maintaining populations of species like this may provide a valuable buffer against catastrophes in restricted native areas. Even the most urbanised areas hold much of interest: Barn Swallows *Hirundo rustica* roost in large numbers on buildings and trees in residential areas, while Pacific Swallows *H. tahitica* roost on the rigging of boats in Serangoon Harbour. The adaptable Javan Myna *Acridotheres javanicus* is successful in urban, other artificial, and modified habitats, and only absent from forest interiors. It is said to have been introduced but colonisation from Java, through Sumatra, following man-induced habitat change, may also have occurred. Much has been written about habitats and species lost from Singapore but, in addition to the establishment of nature reserves, there are many opportunities and developments to encourage nature conservation activity.

Javan Myna, Singapore's commonest bird.

Frank D. Steinheimer, former bird curator of The Natural History Museum, Tring, and now PhD student of the University of Rostock, introduced his new studies on "***The avian collection of the Natural History Museum Bamberg - a historical and taxonomical treasure***". In its exhibition hall from 1794, the Naturkunde-Museum of Bamberg, North-Bavaria, Germany, houses a very fine collection of exotic and European birds. This previously un-studied ornithological display collection lacks much of its data but most of the information can be restored by using archival material. Frank has already discovered many historically important specimens among the 1,550 birds, e.g. birds assembled/collected by Amalie Dietrich (1821-1891), Johann Cesar Godeffroy (1813-1885), Johann Natterer (1787-1843), Johann Lukas Schönlein (1793-1864), Carl Theodor Ernst von Siebold (1804-1885), Johann Baptist von Spix (1781-1826), Johann Heinrich Christian Sturm (1805-1862) and Emil Weiske (1867-1950). The European birds include several rare vagrants to the Bamberg region, including Golden Eagle and Rose-coloured Starling.

Furthermore, the museum holds also several rare bird specimens, some in higher numbers than in any other museum world-wide, among them the Tooth-billed Pigeon from Samoa and two Shoebills, which arrived at Bamberg just 7 years after the species was described by John Gould. As most of Bamberg's specimens are very old and some from rarely visited localities, Frank hopes to locate rare or even undescribed taxa within the collection, which he then intends to work up taxonomically as well.

Richard Chandler spoke briefly on the phenomenon of "***Rhynchokinesis in waders***"**,** illustrated with spectacular slides, to demonstrate the flexibility of the upper mandible. The upper mandible is flexible both upwards, which is likely to be a comfort action, as it seems to occur when yawning or perhaps when bringing up a pellet, and downwards, when it aids manipulation of food items. The upward flexibility is much greater than downward. This topic is the subject of a paper due to appear shortly in *British Birds.*

Julian Hume spoke on "***The Penguin of Mauritius – dodos, journals and misinterpretation on a grand scale***": The discovery of Mauritius by the Dutch fleet, under van Neck in 1598, dawned the prosperous Dutch "Golden Century". Fleets to the Far East were instructed to procure objects of scientific interest, including exotic animals. On the return of these fleets to Europe, publishers were eager to reek the benefits of the traveller's tales and experiences. Journals were kept describing and sometimes illustrating the voyage, and illustrations were either directly lifted from this source or seamen were interviewed and their details gleaned for artists to reproduce a picture.

Among specimens, the first Dodo *Raphus cucullatus* from Mauritius, and King Penguin *Aptenodytes patagonicus* from South America probably arrived sometime between 1599 and 1605. Despite popular belief, only three Dodos arrived alive to Europe, and most contemporary Dodo illustrations are derived from these individuals. Publishers lifted written detail or illustration from whatever source was available, hence the extreme confusion that has occurred when trying to decipher which observer had actually seen the bird in life. Interpretation of accounts and illustrations is difficult since these could have been fanciful, artistic, or sensational. Unfortunately, modern scholars have taken much of this source material at face value, reaching bizarre, and sometimes ludicrous, conclusions.

Misinterpretation began even within the dodo's short sojourn with man. In 1605, the historian Clusius depicted a Dodo and King Penguin on separate pages in his natural history book *Exoticorum Libri decem*. The dodo was reputedly based on an illustration from van Neck's journal, whilst the King Penguin is an exact copy based on a woodcut depicting the Dutch in the Straits of Magellan catching and killing penguins for food.

These illustrations were repeated in various works, until in 1648 H. Soeteboom published the journal of Willem West van Zanen (who had visited Mauritius with van Neck in 1598 and again, in 1602). A number of woodcuts were produced to accompany the text, and an artist attempted to reconstruct the Dutch landings described by van Zanen. Probably having to hand the Jonstonus' *Historiae Naturalis*, it appears he lifted the wrong bird from the page and an exact reproduction of the Clusius' King Penguin appears on a Mauritian shore – leaving science to ponder the "Penguin of Mauritius".

James Jobling presented some statistics of ***new species described in the Bulletin BOC*:** The *Bulletin* was first published in1893, since when it has achieved extraordinary importance as a medium for publishing new bird taxa. Rémy Bruckert in Paris has calculated that a total number of 3,806 specific and subspecific names and 169 new genera have been described in its pages since inception.

In volume 1, no fewer than 73 new names were proposed. Volume 3 contained 54 new names, volume 4 contained 50, volume 5 contained 29, and volume 6 contained 37. Such was the influence of the original members of the Club, embracing the most active and energetic members of the BOU, that within a few short years the *Bulletin* had wrested the mantle of premier descriptive journal from the *Proceedings of the Zoological Society of London* (PZS) and *Ibis*. Members roamed the Empire and the world, exploring and collecting, or financed others in the field. Select specimens from their collections were exhibited at monthly meetings of the Club, rapidly followed by scientific descriptions (always in Latin in the early days).

In a period of frenetic activity when prompt publication gave priority to a name, the speed and regularity of publication of a monthly Bulletin undoubtedly influenced many ornithologists into using that medium as a platform for their work. Since those heady days descriptive ornithology has taken second place to new developments in systematics and phylogenetic studies; for example, only four new names were proposed in volume 121 (2001).

The *Bulletin's* nearest "rivals" are the *PZS,* with some 2,757 new names since 1830, and *Ibis* with 1,781 new names since 1859. The German *Journal für Ornithologie* comes a close fourth, with some 1,700 new names since 1853.

The figures so far given represent total number of taxa, including those names subsequently subsumed or synonymised. Dr Alan Peterson, in the USA, has kindly provided statistics based on "currently valid" genera and species only. Under genera the *Bulletin*, with 43 genera, is in 11th place, after such as *PZS* (90), Isis von Oken (77), Linnaeus's *Systema Naturae,* ed. X (74), Vieillot's Analyse (73), and Cabanis & Heine's *Museum Heineanum* (70). For species, the *Bulletin,* with 386 species, is in third place after *PZS* (1,181) and *Ibis* (420).

Bob Scott spoke briefly about "***Darwin's Finches***". With the aid of a selection of slides from a variety of different islands within the Galapagos, he illustrated the point that identification of the 13 different species (and their races) of Darwin Finches is far from easy. Ignoring the seven subspecies of Warbler Finch *Certhidia olivacea*, the remaining 12 species all provided potential identification problems. He concluded that Hermann Heinzel was quite correct when he wrote "There are no other Galapagos birds that provide such identification headaches as these finches.....To make it more complicated there can be freaks and hybrids. Even with long experience, some individuals are just impossible, and only a fool would say that he could identify them all."

Dr J. H. (Jo) Cooper, of the Bird Group, The Natural History Museum, Tring, gave a presentation entitled **"*The Moa in the vineyard: recent discoveries on New Zealand's South Island*":** In June 2001, news broke in the New Zealand media of the first great moa find of the new millennium. The pre-Polynesian swamp site was discovered on the small Bell Hill vineyard in North Canterbury, owned by Sherwyn Veldhuizen and Marcel Giesen. Situated only a few kilometres away from the famous Pyramid Valley moa swamp discovered in 1937, the new site was excavated by a team directed by Richard Holdaway and Trevor Worthy.

Jo was fortunate enough to be invited along to assist (an opportunity not to be missed, and with thanks to the directors). The remains of 120 individual moa were recovered – birds that had been trapped in the mud of a spring-hole some 5m across. Amongst the moa recovered were *Dinornis giganteus*, *D. struthoides*, *Emeus crassus*, *Euryapteryx geranoides* and *Pachyornis elephantopus* (Trevor Worthy, pers. comm.).

In addition to the moa, a wide variety of other birds were recovered, along with well-preserved plant material such as seeds and tree-stumps. The vertebrate remains were presented to the Museum of New Zealand Te Papa Tongarewa, and analysis of the site's assemblage is continuing.

The 910th meeting of the Club was held Tuesday 25 June 2002, in the Sherfield Building Annexe, Imperial College. 26 Members and 8 guests attended.

Members present were: Dr C.F. MANN (*Chairman*), Miss H. BAKER, K.F. BETTON, I.R. BISHOP, Mrs D.M. BRADLEY, D.R. CALDER, Cdr M.B. CASEMENT RN, Professor R.A. CHEKE, Dr. C.T. FISHER, D.J. FISHER, J.B. FISHER, Dr C.B FRITH (*Speaker*), F.M. GAUNTLETT, D. GRIFFIN, C.A.R. HELM, R.H. KETTLE, J.A. JOBLING, R.G. MORGAN, D.J. MONTIER, Mrs M.N. MULLER, N.J. REDMAN, R.P. TIPPER, R.E. SCOTT, S.A.H. STATHAM, C.A. WALKER, and Ms K. WAY.

Guests attending were: Ms G. BONHAM, Mrs J.B. CALDER, Mrs C.R. CASEMENT, Mrs B.H. FISHER, Dr. D.W. FRITH, Mrs M.H. GAUNTLETT, Cdr. J.N. HAMMERSLEY R.N. and Mrs M. MONTIER.

After dinner, Dr Clifford B. Frith gave a fascinating talk under the title "Artful sex - the bowerbirds and their amazing bowers", illustrated by his slides of living birds at their bowers and incorporating results arising of field work in Australia and New Guinea, by the speaker and his wife Dr Dawn Frith, over the past 20 years. Slides included six splendid colour plates by Eustace Barnes for a forthcoming book on the bowerbirds (Ptilonorhynchidae) for the Oxford University Press Bird Families of the World series.

While long closely associated with the birds of paradise, the two groups were clearly demonstrated in the 1930s and 1960s to be anatomically quite distinct from one another. Subsequent life history studies and recent molecular investigations confirm that the two families differ in many respects and show that many families separate them within the passerines. Since a book by E. Thomas Gilliard (1969), the bowerbird family was considered to comprise 18 or 19 species, but the speaker considers there to be 20 valid species.

The three species of sexually monomorphic catbirds (*Ailuroedus*) are socially pair-bonding, territorial, monogamous birds that do not clear courts or build bowers and were not discussed further.

Sixteen of the 17 polygynous species of bowerbird are unique in constructing bowers that they decorate with objects. The speaker dealt specifically with one court-clearing bowerbird and the various forms of bowers, their construction, decoration, and painting of the remaining species. These species were discussed according to basic bower type and the relative complexity of structures within these types.

The 'court' of the sexually monomorphic Tooth-billed Bowerbird and the 'avenues' of the silky (four *Sericulus* spp.), Satin (one *Ptilonorhynchus* sp.), and the grey bowerbirds (five *Chlamydera* spp.) were reviewed. The drab males of simple court-clearing Tooth-bills 'compensate' for their lack of elaborate plumage with loud court-advertisement vocalizations and high quality vocal avian and other mimicry in courtship subsong.

A clear relationship exists between the extent of colourful adult male plumage and the relative complexity of bower structure within both the avenue (as above) and the 'maypole' (monotypic *Archboldi*a, the four *Amblyornis* spp., and monotypic *Prionodura*) bower building species. Bowers of species with colourfully plumaged males are simple and little decorated, while those of drab males are complex and better decorated. Gilliard referred to this conspicuous correlation as the "Transferral Effect". Bowers, their decoration and painting, and male courtship displays at them largely result from sexual selection by choosy females seeking traits indicative of male experience (= age/survival). Thus the 'externalised' traits observable in bowers and their elaboration provide indicators, or symbols, of male fitness (cf. the 'good genes' hypothesis). Other topics were discussed, including the fact that male bowerbirds obtain adult plumage at the advanced age of 6-7 years, that they have a high life expectancy for passerine birds, that bower sites (and some bower structures) are highly traditional (persisting for years), that they constantly compete by bower marauding and decoration theft, that few (the older) males mate with several to many females in a season, and that successful males have better bowers, decorations, vocalizations, and displays than do less successful rivals.

Ideas about the origins of bower building and the functions of bower structures were reviewed and discussed. A recent study showed bowerbirds to have larger brains than similarly-sized and ecologically similar Australasian passerines. Furthermore, those species building more complex bowers have larger brains than those building more simplistic ones. The talk stimulated a lively question and discussion period.

BOOK RECEIVED

Borrow, N. & Demey, R. 2001. *Birds of Western Africa.* Pp. 832, 147 colour plates, approx. 1100 distribution maps. Christopher Helm, London. ISBN 0-7136-3959-8. £55.

The publication of this book is a landmark in West African ornithology. It covers 1285 species known to occur within the book's geographical remit and provides coloured illustrations of nearly all of them. This is now obligatory for an identification guide and, pleasingly, many of the plates include the first published depictions that actually look like the birds involved. That said, some of the plates (e.g. of the coucals) lack a certain something, being too dark, too reddish at the expense of blues and greens, and failing to spring out of the page to bring the birds to life. Nevertheless, the extent of the difficulties of identifying members of some difficult groups is not shirked and owners of this book will be able to increase significantly their confidence that they have got the name for a particular bulbul, for instance, right.

The introductory sections are well organised and well written, but the species are not numbered, nor are details of original descriptions provided. For nearly all species there is a colour-coded distribution map, with ranges of the birds' lengths, followed by a brief diagnostic description and differences between breeding, non-breeding and juvenile plumages and sometimes of distinct subspecies. Next come descriptions of voice, habits, similar species, status and distribution and the occasional note. There is very little information on breeding and so for data on breeding locations, dates, clutch sizes and descriptions of nests it will still be necessary to refer to the book's predecessors (e.g. Bannerman's *Birds of Tropical West Africa* and *The Birds of West and Equatorial Africa*, Mackworth-Praed & Grant's *African Handbook of Birds*, Serle *et al*'s *A Field Guide to the Birds of West Africa*) or to the as yet incomplete *Birds of Africa*. Borrow & Demey's book does, however, include a wealth of new data, especially on conservation status and on vocalizations for which references are given Chappuis's in *Sounds of North, West and Central African Birds*.

This book has enormous advantages in being up-to-date, mostly very well illustrated, and in a single volume, with references to the literature for each country, clear maps and comprehensive coverage. But how do its slight disadvantages (insufficient breeding data, lack of detail on subspecies, lack of citations within the species accounts) weigh up against its main competitors, literally? It weighs in at 2025g, *c.* 10 % of a normal airline baggage allowance. Despite this, and other drawbacks outlined above, *Birds of Western Africa* is a must for all interested in African birds. The authors and publishers must be congratulated on a major success by providing a much-needed book that will become a standard work, one that is unlikely to be surpassed for many years.

Robert Cheke

A review of the taxonomy and systematics of the Sickle-winged and White-winged nightjars (Caprimulgidae)

by Nigel Cleere

Received 27 January 2001

Although South America hosts 30 species of nightjar, many are poorly represented in museum collections and are rarely studied in the field. As a result, the classification of neotropical caprimulgids at a generic level has been largely ignored by modern ornithologists. Twelve South American species are currently placed in *Caprimulgus,* which is the largest genus, whilst the monotypic *Eleothreptus* is one of the most distinctive.

The Sickle-winged Nightjar *Eleothreptus anomalus* and White-winged Nightjar *Caprimulgus candicans* are two of the least known species, but morphological similarities between the two were first noted well over a century ago (Pelzeln 1868). Recent studies now reveal that they also share similar habitat preferences, vocalizations and breeding behaviour, suggesting that they might actually be congeneric (Cleere 1998, 1999). The taxonomy, morphology and ecology of the two species are now reviewed in an attempt to establish their true affinities.

Methods and material

I examined 28 specimens of *Eleothreptus anomalus* (10 males, 15 females and 3 immatures) in the following museums: The Natural History Museum, Tring, U.K. (5); Nationaal Natuurhistorisch Museum, Leiden, Netherlands (3); Muséum national d'Histoire naturelle, Paris, France (1); Museum für Naturkunde, Berlin, Germany (3); Naturhistorisches Museum, Vienna, Austria (6); American Museum of Natural History, New York, U.S.A. (2); Field Museum of Natural History, Chicago, U.S.A. (2) and Museo Nacional de Historia Natural de Paraguay, Asunción, Paraguay (6 – some now deposited in Naturhistoriska Riksmuseet, Stockholm, Sweden and Museum of Natural History, University of Kansas, USA). I also examined 3 specimens of *Caprimulgus candicans* (2 males and 1 immature) at the Naturhistorisches Museum, Vienna, Austria (2) and Museo Nacional de Historia Natural de Paraguay, Asunción, Paraguay (1). I studied a small, breeding population of *Caprimulgus candicans* at Aguará Ñu within the Reserva Natural del Bosque Mbaracayú, Canindeyú, Paraguay, in October 1999, and compared male vocalizations with recent Paraguayan recordings of male *Eleothreptus anomalus*.

The genus *Eleothreptus* G.R.Gray, 1840

In 1837, John Gould exhibited a male nightjar at a meeting of the Zoological Society of London, and later described it as a new genus and species in the Society's proceedings for that year, which were published in May 1838 (Gould 1838a). He also described the genus and species in part 2 of his *Icones Avium*, which was published in August 1838 (Gould 1838b). The bill, nostrils, rictal bristles, wings, tail, tarsi and feet were described and, as a reference to the bird's unique wing shape, he named the genus *Amblypterus* (from the Greek words *amblus,* meaning dull or blunt and *pterux* a wing).

In 1840, G.R.Gray considered the generic name to be similar to a word used in entomology and introduced a new name *Eleothreptus* (from the Greek *heleothreptus*, which means marsh-dwelling), the species at that time being only known from marshlands (Gray 1840).

In 1866, P.L.Sclater published the generic name as *Heleothreptus,* and this spelling was chosen over *Eleothreptus* by Hartert (1892), thereby making it an unjustified emendation under ICZN (1999), Article 33 2.3.

Morphological characteristics that separate this genus from *Caprimulgus* are a broader bill, proportionally longer rictal bristles, a short, square tail and partially feathered tarsi. Males also have strongly curved primaries, but the short secondaries

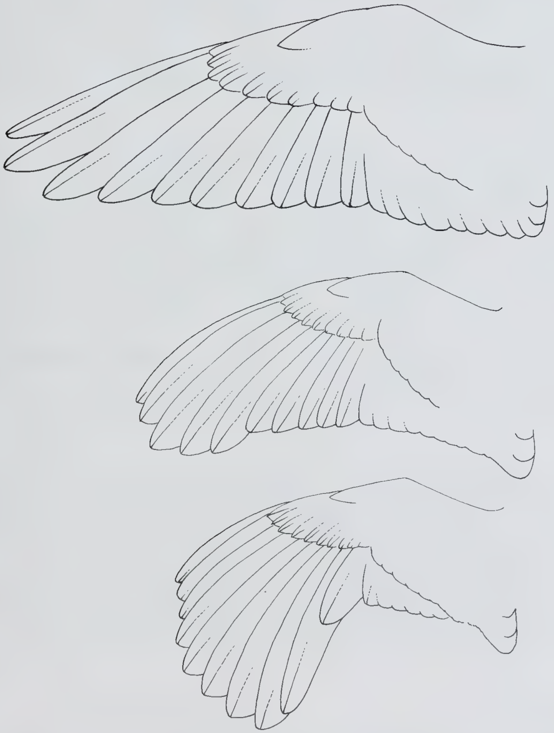

Figure 1. Wing shapes of male nightjars (from top to bottom). a European Nightjar; b White-winged Nightjar; c Sickle-winged Nightjar

of male Sickle-winged Nightjars may have evolved through territorial and courtship display activity and possibly do not constitute a generic character.

Sickle-winged Nightjar *Eleothreptus anomalus* (Gould, 1838)

Taxonomy

Gould's original specimen was also described as a new species (see above) and he gave it the specific name *anomalus,* a latin word meaning strange. Gould did not give a type locality, but as a footnote to the original description, J.E.Gray considered it to be Demerara or the Brazils (Gould 1838a). It was later designated as São Paulo by Pinto (1938). Only one other name exists within the taxonomy of this species. *Caprimulgus mercurius* was simply extracted from a J.J. Natterer manuscript (Burmeister 1856) and published as a synonym of *Eleothreptus anomalus,* thereby making it unavailable under ICZN (1999), Article 11 6.

Museum data

The type specimen described by Gould is deposited in The Natural History Museum, Tring. An accurate inventory of museum study skins has not been undertaken to-date, but a figure of 25 specimens (Pearman & Abadie 1995) appears to be an underestimate, as literature searches and museum studies have so far revealed 57 birds (see Appendix), although this figure does include some recent additions. Numbers in individual institutions are generally small, although the Museu de Zoologia da Universidade de São Paulo in Brazil has 10 specimens (Straube 1990) and the Naturhistorisches Museum, Vienna and The Natural History Museum, Tring have 6 and 5 specimens respectively. Recent additions to collections appear to be few and far between. Two specimens were taken in Santa Catarina, Brazil in 1991 (Teixeira pers comm, Kirwan *et al.* 1999) and an injured bird was collected in Paraná, Brazil in 1996 (Bornschein *et al.* 1996). At least 5 birds were collected in Paraguay in 1998 and 1999, by the Museum of Natural History, Kansas, and the Swedish Museum of Natural History, Stockholm.

Recent records

Four were seen in Córdoba, Argentina (Miatello *et al.* 1991); a pair was studied in Entre Ríos, Argentina, December 1991 – January 1992 (Pearman & Abadie 1995); a small population was studied in Córdoba, Argentina, September – November 1994 (Straneck & Viñas 1994); ten individuals were seen in São Paulo, Brazil between 15 July 1995 and 23 April 1998 (Kirwan *et al.* 1999) and five or six were observed in Minas Gerais, Brazil between 22 June 1996 and 8 November 1998 (Kirwan *et al.* 1999).

Description

A small, sexually dimorphic nightjar, approximately 18 – 20 cm long and relatively short tailed. Males are generally greyish-brown, often tinged cinnamon, and occasionally show an indistinct buffish collar on the hindneck. They have a pale buffish-white stripe above the eye and an indistinct, greyish-white submoustachial stripe, but lack a white patch on the throat. The primary coverts are cinnamon, which show as a diagnostic pale patch on the closed wing, and the scapulars have distinctive blackish markings, shaped like inverted Christmas trees. The primaries are strongly curved, largely blackish, and the outer six are boldly tipped whitish. The secondaries are extremely short and together with the curved primaries, they form the unique wing shape. The tail is broadly barred cinnamon-buff and the outer three feathers are narrowly tipped whitish or buffish-white. Females are browner, often with longer wings and tails, and lack the distinctive wing shape. The primaries and secondaries are brown, barred tawny and very narrowly tipped buffish-white. Immatures are similar to the adults, although males lack the characteristic wing shape of adult males; juveniles are similar to the adult females (Cleere 1998, 1999).

Range

Central and eastern Brazil, eastern Paraguay and north-eastern Argentina. Probably resident throughout most of its range, although may be a migrant only (September - March?) in the south. Occurs in open country from Distrito Federal and Minas Gerais in Brazil, south and south-west through southern Brazil and eastern Paraguay to Córdoba and Buenos Aires in north-eastern Argentina. Further Argentine records from Catamarca and Salta appear to be unsubstantiated (Collar *et al.* 1992).

Habitat

Inhabits seasonally flooded grasslands (Miatello *et al.* 1991, Straneck & Viñas 1994), savanna and grassland with marshes, streams and areas of surface water (Cleere 1998), grassland close to dry degraded woodland and water (Kirwan *et al.* 1999) and gallery forest, chaco-type woodland and transitional woodland, often near water or marshland (Collar *et al.* 1992, Pearman & Abadie 1995).

Vocalizations and behaviour

Crepuscular and nocturnal. Calls include rapid *chip, tchup* or *tchut* notes, which may be rather weak. Females also utter harsh *gzee, gzee* sounds (Straneck & Viñas 1994, Cleere 1998).

In the breeding season, males perform short display flights during which they make muffled wing flapping sounds (Straneck & Viñas 1994).

Roosts and nests on small patches of bare earth amongst clumps of vegetation. Often sits on roads, tracks and low perches at night. When foraging, the fluttery flight is interspersed with glides and sudden changes of direction. Also hunts from the ground by making short sallies (Straneck & Viñas 1994, Pearman & Abadie 1995, Cleere 1998).

Eggs

Very few eggs of this species appear to have been found, collected, or described in the literature. Two were taken on 17 November in São Paulo, Brazil (Ihering 1902);

two on 28 November 1925 in Rio Grande do Sul, Brazil (Lowen 1999) and one in mid November in Santiago del Estero, Argentina (Pereyra 1950). There is also an egg deposited in the Western Foundation for Vertebrate Zoology (catalogue no. 154.874), collected on 7 October 1936 in Minas Gerais, Brazil. The eggs are elliptical, 23.2 - 31. 4 x 18.2 - 22.8 mm, have a buffish or pinkish-buff ground colour, and are finely spotted and scrawled brown and grey.

White-winged Nightjar *Caprimulgus candicans* (Pelzeln, 1866)

Taxonomy

First mentioned by Azara (1805), a Spanish army officer serving in Paraguay, who called it 'Ibiyau alas y cola blancas'. Subsequently, this name was mistakenly treated by many authors as a synonym of *Caprimulgus leucurus* Vieillot, 1817 (= *C. cayennensis* Gmelin, 1789).

A male was eventually collected by J.J. Natterer in 1823, and given species number 530 in his unpublished catalogue. Pelzeln later described it as *Stenopsis candicans* (*candicans* being the Latin word for whitish) and sent a copy to P.L.Sclater, who published it in the second of his papers on American Caprimulgidae, in the Proceedings of the Zoological Society of London for 1866. The type locality was given as Irisanga, Brazil by Pelzeln (*In* Sclater 1866), and Orissanga, São Paulo by Collar *et al.* (1992). Natterer also obtained a nightjar (catalogue number 1150) from Baron von Langsdorf, a German naturalist and collector who was the Russian consul to Brazil at the time (Jobling 1991). Pelzeln named it *Stenopsis langsdorfi* after the collector and his description was also published by Sclater, but with Sclater's cautionary note that owing to the variations of age and sex within the Caprimulgidae, it could turn out to be only the young female of *S. candicans*. The type locality for this specimen was listed as Cuyaba, Brazil by Pelzeln (*In* Sclater 1866), and Cuiabá, Mato Grosso, by Collar *et al.* (1992). *S. lansdorfi* was eventually treated as a synonym of *S. candicans* by Hartert (1892), an action which has subsequently proved to be correct. The genus *Stenopsis* Cassin, 1850 was subsequently found to be preoccupied by *Stenopsis* Rafinesque 1815, a genus of Coleoptera, and was renamed *Thermochalcis* by Richmond (1915). Peters (1940) later subsumed *Thermochalcis* into *Caprimulgus*.

Museum data

The type specimens of both *Stenopsis candicans* and *Stenopsis langsdorfi* are deposited in the Naturhistorisches Museum in Vienna. A male taken on 11 September 1987 in Bolivia and housed in the Museo de Historia Natural Noel Kemff Mercado, Santa Cruz represents the first record for that country (Davis & Flores, 1994). There is also a recent specimen, a male, in the Museo Nacional de Historia Natural de Paraguay, Asunción (Capper *et al.* 2000).

Recent records

Small numbers seen during August – October in Emas National Park, Brazil in the 1980s, with a maximum count of 12 in September 1985, although it was speculated that the area might support hundreds of birds (Collar *et al.* 1992). After the last sighting in October 1990, there were no further published records from this site until a male was seen and photographed in November 1997 (Rodrigues *et al.* 1999). A small population was discovered in the Reserva Natural del Bosque Mbaracayú, Paraguay during July – December 1995 (Lowen *et al.* 1996, 1997) and the area possibly supports a population of up to 60 pairs (Capper *et al.* 2000). No further sightings have yet been reported from Bolivia.

Description

A small, sexually dimorphic nightjar, approximately 19 – 21 cm long. Males are generally greyish-brown, often tinged cinnamon, and have no collar on the hindneck. They have a whitish stripe above the eye and a whitish submoustachial stripe, but lack a white patch on the throat. Some outer lesser coverts, the alula and the primary coverts are mostly white, although this is not generally visible on the closed wing. The scapulars have strong blackish markings, which are occasionally shaped like inverted Christmas trees. The primaries are curved and are largely white proximally, blackish distally, the amount of white increasing on each feather towards the body. The secondaries are also mostly white, as is the tail, with only the central pair of tail feathers being pale greyish-brown. Females are browner, completely lack white in the plumage, and the primaries and secondaries are brown, regularly barred pale tawny. Immatures and juveniles are similar to adult females (Cleere 1998, 1999).

Range

Central and south-western Brazil, eastern Paraguay and northern Bolivia. Probably resident throughout it's range. Occurs in open, lowland country in Goiás, Brazil and Canindeyú, Paraguay. There are historical records from Mato Grosso and São Paulo, Brazil (see Museum data). The modern record from Beni, Bolivia (Davis & Flores 1994) remains an isolated one to-date.

Habitat

Inhabits open grasslands and cerrado with scattered trees, bushes, dwarf palms, termite mounds and anthills (Pelzeln 1868, Collar *et al.* 1992, Clay *et al.* 1997, Lowen *et al.* 1997). Possibly favours areas that are regenerating after fires (Collar *et al.* 1992, Rodrigues *et al.* 1999), although further research is recommended (Capper *et al.* 2000).

Vocalization and behaviour

Crepuscular and nocturnal. Males give undulating whistles during territorial disputes or when alarmed. Females utter sharp, single notes (Cleere 1998).

In the breeding season, males perform short display flights from low termite mounds, during which they make rapid, wing fluttering sounds (Clay *et al.* 2000), the white wing and tail feathers being extremely noticeable.

Roosts and nests on small patches of bare soil in cerrado or grassland, usually beneath overhanging grasses and plants. Appears to rely on crypsis less than other nightjar species, using nearby vegetation for protection during the day. Does not appear to sit on roads and tracks at night, but frequently uses low perches. When foraging, flight is often slow and interspersed with frequent glides. At other times, flight is strong and direct with a series of double wing beats and short glides.

Eggs

The first eggs of this species were discovered in Canindeyú, Paraguay on 22 November 1997 (Capper *et al.* 2000). As a result of intensive field studies, several nests have been found in the same region during the years 1998, 1999 and 2000 (Pople pers. comm.). The eggs are elliptical, 28.7 – 28.9 x 21.3 – 21.4 mm, have a buffish or creamy-brown ground colour and are finely spotted and scrawled grey, black and brown.

Conclusion

The Sickle-winged and White-winged Nightjars are two poorly known, neotropical species that share similar morphological features, vocalizations, behavioural traits and habitat preferences. Both have restricted ranges, occurring in open grasslands in southern South America, generally where there are reddish soils. They are both sexually dimorphic. Males have cinnamon-tinged, cryptic plumages and lack the white mid-wing and outer tail markings typically found in the genus *Caprimulgus*. Females have a brownish, variegated plumage, although they do not appear to nest or roost on leaf litter. Males have curved primaries (Fig. 1b & c) which, during territorial and courtship display flights, produce a flapping sound quite unlike the deliberate clapping given by many *Caprimulgus* nightjars, which have straighter primaries (Fig.1a). The wings of the males have also evolved to different extremes. The Sickle-winged Nightjar has the strangest shaped wing of all nightjar species, and appears to have a sound-orientated display flight. The White-winged Nightjar has more white in the wing than any other species, and appears to have a more visual display. In between display flights, the males of both species give similar, soft, call notes, although descriptions of these vocalizations have yet to be published. The eggs of both species are rather similar, having a buffish ground colour with fine markings, and differ from those of most *Caprimulgus* eggs, which generally have a whitish ground colour and are boldly spotted and blotched. Both species also share the broader bill, proportionally longer rictal bristles and partially feathered tarsi, which further differentiate them from *Caprimulgus* nightjars.

The White-winged Nightjar is clearly not a *Caprimulgus* species, but because of its extreme scarcity, it has languished within this genus since 1940. My studies suggest that it is probably a close relative of the Sickle-winged Nightjar and therefore also belongs in the genus *Eleothreptus*. The systematics for the genus *Eleothreptus* should now be:-

***Eleothreptus* Gray G.R. 1840**

Amblypterus Gould 1838, *Proc. Zool. Soc. Lond.* 1837, p. 105.
- for publication date, see Sclater P.L. 1893, *Proc. Zool. Soc. Lond.* 1893, p. 437.
- junior homonym of *Amblypterus* Agassiz 1833, *Poiss. Foss.* 11 (1), p. 28. (fossil fish).
- incorrect subsequent spelling *Amplypterus* Wiegmann1838, *Arch. f. Nat.* 4 (2), p. 380.

Type, by original designation and monotypy, *Amblypterus anomalus* Gould 1838.

Eleothreptus Gray G.R. 1840, *List Gen Bds,* p. 7.
- published as a *nomen novum* for *Amblypterus* Gould 1838, *Proc. Zool. Soc. Lond.* 1837, p. 105.
- incorrect subsequent spelling *Eleotreptus* Lesson 1843*, L'Echo Monde Savant* 10th year, Pt. 2 no. 5, col. 109.
- incorrect subsequent spelling *Heleothreptus* Sclater P.L. 1866, *Proc. Zool. Soc. Lond.* 1866, p. 143.

Heleothreptus Hartert 1892, *Cat. Birds Brit. Mus*. Vol. 16, p. 593.
- unjustified emendation of *Eleothreptus* (Gray G.R. 1840), see ICZN (1999), Art. 33 2.3.

Eleothreptus anomalus (Gould 1838)

Amblypterus anomalus Gould 1838, *Proc. Zool. Soc. Lond.* 1837, p. 105.
- for publication date, see Sclater P.L. 1893, *Proc. Zool. Soc. Lond.* 1893, p. 437.

Caprimulgus mercurius Burmeister 1856, *Syst. Ueber Thiere Bras*. Pt. 3, (Aves), p. 383.
- based on a Natterer manuscript.
- published as a synonym of *Eleothreptus anomalus*, and unavailable under ICZN (1999), Art. 11 6.

Eleothreptus candicans (Pelzeln 1866)

Stenopsis candicans Pelzeln 1866, *In* Sclater P.L., *Proc. Zool. Soc. Lond.* 1866, p. 588.
- based on a Natterer manuscript, species no. 530.
- also based on the "Ibiyau alas y cola blancas" in Azara 1805, *Apunt. Hist. Nat. Paraguay*, Vol. 2, p. 554.

Stenopsis langsdorffi Pelzeln 1866, *In* Sclater P.L., *Proc. Zool. Soc. Lond.* 1866, p. 589.

- based on a Natterer manuscript, species no. 1150.
- incorrect subsequent spelling *langsdorfi* Pelzeln 1868, *Orn. Bras.* Pt. 1, p. 12.

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Appendix 1:
Museum study skins - Sickle-winged Nightjar

Museum	*sex*	*date*	*locality*
AMNH477064	?	1850	Brazil
AMNH239449	?	—	—
BMNH1888.8.1.167	F	—	S. Brazil
BMNH1890.2.18.184	F	19-01-1823	Irisanga, Brazil
BMNH1925.7.3.25	M	April 1924	Caravini, Villarica, Guaíra, Paraguay
BMNH1885.11.20.333	F	31-03-1877	N. Buenos Aires, Argentina
BMNHvell.cat.31.71a	M	—	Demerara, Brazil [Holotype]
FMNH189705	F	01-01-1946	Fazenda Gaviao, São Paulo, Brazil
FMNH189712	Imm	18-01-1946	Fazenda Gaviao, São Paulo, Brazil
LSUMZ65133	?	Oct. 1964	Itapetininga, São Paulo, Brazil
MACN?	M	12-11-1937	Tostado, Sante Fe, Argentina
MACN?	F	25-04-1938	Tostado, Sante Fe, Argentina
MACN?	F	15-02-1939	Tostado, Sante Fe, Argentina
MACN?	M	04-02-1945	Tostado, Sante FE, Argentina
MACN?	M	08-02-1945	Tostado, Sante Fe, Argentina
MCZ199980	F	18-11-1900	Paranapiacaba, São Paulo, Brazil
MCZ76434	?	—	Demerara trade skin
MHNCI4240	M	27-08-1994	Fazenda Santa Rita, Paraná, Brazil
MHNCI2578	F	1946	E. Paraná, Brazil
MHNCI2853	F	12-08-1988	Laranjeiras, Piraquara, Paraná, Brazil
MIZS?	F?	?	Colonia Risso, Rio Apa, Paraguay [lost?]
MN35383	?	28-09-1978	Brasilia NP, Distrito Federal, Brazil
MN?	?	03-06-1991	Rio Novo, Santa Catarina, Brazil
MN?	?	20-09-1991	Quatro Barras, Santa Catarina, Brazil
MN36551	F	11-11-1986	Canbúi, Curitiba, Paraná, Brazil
MNHN1874.330	F	—	Ipanema, São Paulo, Brazil
MNHNP001245	F	14-03-1992	E. Meigareyo, Isla Yacyreta, Paraguay
MNHNP?	M	22-10-1999	Yababery, Misiones, Paraguay
MZUSP13071	M	—	E. São Paulo, São Paulo, Brazil
MZUSP6071	F	04-11-1906	Ipiranga, suburb of São Paulo, Brazil
MZUSP16218	F	Dec. 1931	Ipiranga, suburb of São Paulo, Brazil
MZUSP14530	F	Oct. 1932	Ipiranga, suburb of São Paulo, Brazil
MZUSP1702	F	Nov. 1900	Alto da Serra, Cubatão, São Paulo, Brazil
MZUSP13832	F	20-10-1932	Moji das Cruzes, São Paulo, Brazil
MZUSP13829	M	24-07-1933	Moji das Cruzes, São Paulo, Brazil
MZUSP31806	F	22-11-1947	Rio das Pedras, São Paulo, Brazil
NMW41.610	F	20-11-1820	Curitiba, Paraná, Brazil
NMW41.608	F	22-07-1820	Ciméterio do Lambari, São Paulo, Brazil
NMW41.611	M	01-03-1821	Itararé, Rio De Janeiro, Brazil
NMW41.609	M	24-11-1819	Ipanema, São Paulo, Brazil
NMW41.612	F	03-03-1821	Itararé, Rio De Janeiro, Brazil
NMW41.608	F	Sept. 1819	Ipanema, São Paulo, Brazil
NRM986749	F	05-11-1998	Yababery, Misiones, Paraguay
NRM986737	M	12-04-1998	Yababery, Misiones, Paraguay
RMNHcat.no.1	F	—	Brazil

RMNHcat.no.2	F	01-12-1818	Mato Dentro, São Paulo, Brazil
RMNHcat.no.3	M	09-01-1819	Goyao, São Paulo, Brazil
UKNHM90188	M	21-10-1999	Yababery, Misiones, Paraguay
UKNHM90189	F	22-10-1999	NW Ayolas, Yababery, Misiones, Paraguay
USNM335188	F	23-07-1933	Moji das Cruzes, São Paulo, Brazil
ZMB9001	M	—	Brazil
ZMB B295	M	—	Porto Alegre, Brazil
ZMB B295	F	—	Porto Alegre, Brazil
ZMKU70.553	F	03-08-1847	Lagoa Santa, Minas Gerais, Brazil
ZMKU?	F	—	Lagoa Santa, Minas Gerais, Brazil [lost?]

Appendix 2:
Museum study skins - White-winged Nightjar

Museum	*sex*	*date*	*locality*
CBF0624	M	11-09-1987	Beni, Yucuma, Bolivia
MNHNP?	M	1997	Aguara Ñu, Canindeyú, Paraguay
NMW40.665	M	06-01-1823	Irisanga, Sao Paulo, Brazil [Holotype]
NMW40.664	Imm	1823/1825	Cuyaba, Matto Grosso, Brazil [Holotpe - S.langsdorfi]

Key :

M	male	F	female		
Imm	immature	?	data unconfirmed	—	no data

AMNH	American Museum of Natural History, New York, USA.
BMNH	The Natural History Museum (British Museum of Natural History), Tring, UK.
CBF	Colección Boliviana de Fauna, Museo Nacional de Historia Natural. La Paz, Bolivia.
FMNH	Field Museum of Natural History, Chicago, USA.
LSUMZ	Louisiana State University Museum of Zoology, Baton Rouge, USA.
MACN	Museo Argentino de Ciencias Naturales, Buenos Aires, Argentine.
MCZ	Museum of Comparative Zoology, Harvard, USA
MHNCI	Museu de História Natural 'Capão da Imbuia', Curitiba, Brazil.
MIZS	Museo ed Istituto di Zoologia Sistematica, Università di Torino, Turin, Italy.
MN	Museu Nacional da Universidade Federal do Rio de Janeiro, Brazil.
MNHN	Muséum national d'Histoire naturelle, Paris, France.
MNHNP	Museo Nacional de Historia Natural de Paraguay, Ascuncion, Paraguay.
MZUSP	Museu de Zoologia da Universidade de São Paulo, Brazil.
NMW	Naturhistorisches Museum Wien, Vienna, Austria.
NRM	Naturhistoriska Riksmuseet (Swedish Museum of Natural History), Stockholm, Sweden.
RMNH	Nationaal Natuurhistorisch Museum (formerly Rijksmuseum van Natuurlijke Historie), Leiden, Netherlands.
UKNHM	University of Kansas Natural History Museum, Kansas, USA.
USNM	National Museum of Natural History, Smithsonian Institution, Washington DC, USA.
ZMB	Museum für Naturkunde, Berlin, Germany.
ZMKU	Zoologisk Museum, Københavns Universitet, Copenhagen, Denmark.

New records and amendments to the birds of Angola

by W. R. J. Dean, R. J. Dowsett, Alison Sakko & R. E. Simmons

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The recent checklist of the birds of Angola (Dean 2000) contains some errors and omissions. In two cases these refer to species whose unproven occurrence were inadvertently listed as definite records (Gabon Woodpecker *Dendropicos gabonensis* and Blue Cuckoo-shrike *Coracina azurea*), while others refer to incorrect locality details. Subsequent to the publication of Dean (2000), the presence of Lesser Spotted Eagles *Aquila pomarina* has been confirmed by the results of a satellite-tracking study (Meyburg *et al.* 2001) and seven species, Northern Royal Albatross *Diomedea* [*epomophora*] *sanfordi*, Spectacled Petrel *Procellaria conspicillata*, Red-billed Tropicbird *Phaethon aethereus*, White-tailed Tropicbird *P. lepturus*, Grey Phalarope *Phalaropus fulicaria*, Common Black-headed Gull *Larus ridibundus* and Little Tern *Sterna albifrons* have been added to the Angolan list (Lambert, in press). Some new distributional and breeding data have also been provided by colleagues, including the results of one count of waterbirds along c. 150 km of coast between Tombua and Baia dos Tigres in January 1999 by AS, and four counts of birds at the Cunene river mouth by RES. Amendments to species accounts follow:

WHITE-BREASTED CORMORANT *Phalacrocorax carbo*

There are few breeding records for this common species for Angola (Dean 2000). It is of interest to note that *c.*50 pairs were nesting on the remnants of jetties at the abandoned settlements of Armacão and Baia dos Tigres on the eastern shore of the now uninhabited island of Ilha dos Tigres in January 1999 (AS). Two groups of nests, one of 4 active nests (2 with 3y, 2 with 2y) on a cliff, and another of 22 active nests were found 8 km upstream from the mouth of the Cunene river on 12 November 2000 (RES).

CAPE CORMORANT *Phalacrocorax capensis*

Although considered to be mainly a winter visitor to the south-western Angolan coast (Dean 2000), Brooke (1981) suggested that small numbers may breed on islands off the Angolan coast. A large group of Cape Cormorants seen during an aerial reconnaisance of Ilha dos Tigres in August 1996 were thought to be nesting (P.D. Morant, in Dean 2000). About 200-300 nests containing eggs and chicks were recorded in January 1999 on two old jetties at the same localities on Ilha dos Tigres as the White-breasted Cormorants above (AS). In February 2001 an estimated 1000 pairs were nesting on the ground along the eastern edge of the island (Rico Sakko, pers. comm.). This is a substantial northward extension of *c.*300 km of the breeding range in this species (see Crawford 2000). The previous northernmost breeding records were on the Skeleton Coast of Namibia, at Die Oase (19° 27'S, 12°49'E) and Terrace Bay (19° 59'S, 13° 02'E) (Cooper *et al.* 1982).

GREAT WHITE PELICAN *Pelecanus onocrotalus*

Fishermen from the boats that currently fish in the area of Ilha dos Tigres have reported Great White Pelicans breeding on the southern tip of the island during 2001. P. D. Morant (in Dean 2000) suggested that the species nests on Ilha dos Tigres, so the report is not unexpected. About 200 birds were seen there in June and September 2001, including *c.* 50 dark flightless juveniles (A. Schoeman & J. Paterson, pers. comm. to RES). The birds are abundant residents at the Cunene river mouth (Brooke 1981, Simmons *et al.* 1993) and are commonly seen at Baia dos Tigres (Morant 1996).

LESSER FLAMINGO *Phoeniconaias minor*

Only April, May, July, August, and October were given as months of occurrence by Dean (2000). About 360 Lesser Flamingos were counted in January 1999 at Baia dos Tigres (AS).

OSPREY *Pandion haliaetus*

There are few records for this species for Angola. About 10 individual adults are present all year round, regularly spaced along the whole stretch of coast between Tombua (15°48'S, 11°51'E) and the town of Namibe (AS).

LESSER SPOTTED EAGLE *Aquila pomarina*

Placed in square brackets by Dean (2000), as a species likely to occur, but for which there were no records. A recent satellite-tracking study, which traced the routes used by a sub-adult and an immature Lesser Spotted Eagle from northern Namibia, shows that this species does indeed occur in southern and eastern Angola (Meyburg *et al.* 2001). The immature bird was located at 16°11'S, 15°14'E (due west of Mupa, Cunene Province) on 26 February 1994, and at 15°49'S, 18°44'E (east of Cubia, Cuando Cubango Province) on 3 March, from where it flew north-east across eastern Angola and Zambia. The sub-adult bird was located at 16°07'S, 18°04'E (east of Techimpolo, Cunene Province) on 1 April 1994, from where it continued north-easterly through eastern Angola and the Democratic Republic of Congo.

TAWNY EAGLE *Aquila rapax*

Dean (2000) had no records of eggs for this common species. An overlooked record is of an adult incubating eggs on a nest 15 m up in a *Cassine* tree, 12 km north of Ondjiva (17°04'S, 15°43'E), Cunene Province, on 18 May 1973 (WRJD).

ORANGE RIVER FRANCOLIN *Francolinus levaillantoides*

Dean (2000) erroneously noted that this species occurred in Moxico Province, whereas it is more or less confined to the more arid southwest from Cahama (16°17'S, 14°18'E) in Cunene west to Namibe Province and north to about Lobito (12°22'S, 13°32'E) in Benguela Province (Pinto 1983).

AFRICAN BLACK OYSTERCATCHER *Haematopus moquini*
Listed as rare by Dean (2000), with few actual sightings. A total of 35 were recorded in January 1999 at Ilha dos Tigres (16°36'S, 11°43'E), and one was recorded as far north as the town of Namibe (15°12'S, 12°09'E), also in January 1999 (AS).

KELP GULL *Larus dominicanus*
Considered to be an uncommon non-breeding visitor by Dean (2000). A large number (estimated >500 pairs) were nesting in an area from Marco do Farol south to Armacão on the north-eastern edge of the now uninhabited island of Ilha dos Tigres in January 1999, with nests at all stages from eggs to newly-hatched and recently fledged chicks (AS). In February 2001, similar numbers were nesting on a patch on the north-western edge of the island (Rico Sakko, pers. comm.). This represents a substantial northward extension of *c.*200 km of the breeding range for this species, with previous northernmost breeding records on the Skeleton Coast of Namibia at Torra Bay (20º10'S, 13º10'E), Die Oase (19º27'S, 12º49'E) and Cape Fria (18º26'S, 12º00'E) (Bridgeford 1982).

SWIFT TERN *Sterna bergii*
It is likely that this species occurs within the borders of Angola, and rather more frequently than stated by Dean (2000). Bird counts at the mouth of the Cunene river (17°23'S, 11°47'E) suggest that its occurrence is seasonal there, and along the coast of extreme south-western Namibe Province, apparently present all year round, but more common in April-June, and in November (RES).

WHITE-THROATED BEE-EATER *Merops albicollis*
Apart from the Petit specimens from Condé (4°58'S, 12°24'E), Cabinda, mentioned by Dean (2000), there is another specimen, from "Angola" (Traylor 1963). Although the locality where this specimen was collected is not precisely known, Pinto (1983) stated that the specimen was collected "sul do Zaire, é apontado por Hartlaub [1857], para Angola, um record muito antigo devido a Handersson", suggesting that the specimen was collected in Angola and not north of the Zaire river in Cabinda. In fact, evidence suggests that C.J. Andersson (sic) (1827-1867) collected exclusively in Namibia (especially) and South Africa.

MONTEIRO'S HORNBILL *Tockus monteiri*
The most northerly locality in Benguela is more accurately Lobito (12°22'S, 13°32'E), rather than Baia Farta (12°37'S, 13°13'E) as given in Dean (2000).

[GABON WOODPECKER *Dendropicos gabonensis*
This species should be placed in square brackets in Dean (2000), as its occurence in Angola is unproven. The specimens from Cacongo (formerly Lândana) (5°13'S,

12°08'E), Cabinda, collected in 1876 by Petit, were listed as *Dendropicos lafresnayi* by Sharpe & Bouvier (1876) (i.e. Cardinal Woodpecker *D. fuscescens*).]

BROWN-THROATED MARTIN *Riparia paludicola*
An overlooked record of three specimens collected on 17 August at Santa Cruz de Mavinga, 16º19'S; 22º02'E ("Santa Cruz, in Angola near Shangombo") by Benson (1956) extends the known distribution in Angola to Cuando-Cubango Province.

[BLUE CUCKOO-SHRIKE *Coracina azurea*
The locality Kimongo (4°40'S, 12°57'E), where Petit collected the only "Angolan" specimen (Sharpe & Bouvier 1877; Traylor 1963; Dean 2000), is in fact in Congo-Brazzaville, though only a few km from the border. The species should be in square brackets, though will almost certainly be found to occur in Angola.]

LESSER SWAMP-WARBLER *Acrocephalus gracilirostris*
No breeding records for Angola for this locally common resident were given by Dean (2000). Although technically not in Angola, a nest, placed in dense *Phragmites* reeds on the Namibian bank of the Cunene river, was found with one egg and one chick on 8 November 2000 (RES).

COLLARED FLYCATCHER *Ficedula albicollis*
Dean (2000), on the basis of Pinto's (1970) comments, and two specimens, one collected at Huíla town (15°05'S, 13°33'E) and a ringed bird recovered at Dundo (7°22'S, 20°50'E), gave the known distribution of this species in Angola as Huíla and Lunda Norte Provinces. A third specimen, in the Royal Ontario Museum, Toronto, Canada, collected by Jean Bodaly at Chitau (11°15'S, 17°08'E, altitude *c.* 1,500 m), Bié, and unfortunately without date, extends the distribution to eastern Bié Province.

YELLOW-THROATED NICATOR *Nicator vireo*
Dean (2000) erroneously gave the distribution of this species as (*inter alia*) "east to Lunda Sul" citing Traylor (1963). This should read "east to northeastern Lunda Norte (Ripley & Heinrich 1966)", based on a specimen collected by G. Heinrich on the Cassai river at about 7°38'S, 21°32'E in Lunda Norte.

HOUSE SPARROW *Passer domesticus*
There are few distribution records for this species. Dean (2000) noted only that there were records for Namibe town and Lubango and that it was likely to occur in other towns and cities. Common on the Ilha and Morro Bento at Luanda (8°49'S, 13°13'E) in June 2001 (P.D. Morant, pers. comm.).

BLACK-NECKED WEAVER *Ploceus nigricollis*
Distribution given erroneously as "east to Lunda Sul" by Dean (2000). Collected at Songo (formerly Nova Gaia) (10°04'S, 17°33'E) in Malanje, not far west of the

Lunda Sul border. A species of secondary and coffee forest, and likely to occur more widely than present records indicate.

BLACK-EARED CANARY *Serinus mennelli*

The record from Cuanza Sul (Amboiva) (11°32'S, 14°44'E) is so very far west of the known range in eastern Angola that the specimen reported by Traylor (1963) ought to be re-examined. There are suitable patches of climax miombo (*Brachystegia*) woodland from eastern Moxico through Bié and Malanje west to Cuanza Sul, and south to Huíla, and theoretically the species could occur all the way west. There are two uncertain sight records by WRJD at N'Gola (14°20'S, 14°28'E), Huíla, but the species was not recorded by Pinto (1970) for Huíla Province. The possibility remains that the Amboiva specimen, if correctly identified (apparently in the Instituto de Investigação Científica de Angola collection, now under the care of the Instituto de Ciências da Educação, Lubango, and not accessible for examination) is perhaps most likely of an escaped cage-bird. Alternatively, the Amboiva specimen could be a mis-identified Streaky-headed Canary *Serinus gularis*, a species that has not as yet been recorded from the Amboiva district, but that is more likely to occur there.

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Differentiation of *Xiphocolaptes* (Dendrocolaptidae) across the river Xingu, Brazilian Amazonia: recognition of a new phylogenetic species and biogeographic implications

by José Maria C. da Silva, Fernando C. Novaes & David C. Oren

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The genus *Xiphocolaptes* encompasses several of the largest (> 100 g) species of forest and woodland woodcreepers in the Neotropical region. The species with the largest geographical range in the genus is the highly variable Strong-billed Woodcreeper *X. promeropirhynchus*, found from Mexico to Bolivia (Peters 1945). Within this range, 23 subspecies are recognized (Peters 1945). Cory & Hellmayr (1925) suggested that the subspecies of *X. promeropirhynchus* can be grouped into two species: *X. promerophyrhynchus*, the highland group, occupying Central America, mountains of northern Venezuela, Colombia, Ecuador, Peru and Bolivia; and *X. orenocensis*, the lowland group, restricted to the Orinoco and Amazon basins. Although this arrangement was accepted by some authors (e.g., Gyldenstope 1951), it has not been followed by most recent taxonomists (e.g. Zimmer 1934, Peters 1945, Pinto 1978, Meyer de Schauensee 1978, Sibley & Monroe 1994). Ridgely & Tudor (1994) stated that it is premature to split *orenocensis* and *promeropirhynchus* without additional study, although they indicated that there is an altitudinal gap between the two forms along parts of the eastern slope of the Andes.

According to Hellmayr (1925), Peters (1951), Pinto (1978) and Ridgely & Tudor (1994), the *orenocensis* group is composed of six taxa: *orenocensis* (southern

Venezuela, eastern Ecuador, northern Peru and western Brazil, north of the Solimões), *neblinae* (Venezuela: Amazonas, Cerro de la Neblina), *tenebrosus* (Venezuela: western slope of the Mt. Chimantá-tepui and base of Mt. Roraima), *obsoletus* (Eastern Bolívia, Depto. Santa Cruz); *berlepschi* (eastern Peru and western Brazilian Amazonia, south of Solimões to the left bank of the Madeira); and *paraensis* (Brazilian Amazonia, south of the Amazon between the Madeira and Tapajós rivers). No contact between two subspecies of the *orenocensis* group is known. This could be a consequence of the lack of detailed information about the range limits of these taxa, a common problem in neotropical ornithology (Oren & Guerreiro 1994, Silva 1995a), but it is also possible that the ranges of these subspecies are effectively separated by major geographic barriers, such as mountains (*neblinae* and *tenebrosus*) or some of the largest Amazonian rivers (all remaining taxa).

Most of the taxa included in the *orenocensis* group are diagnosable by an unique combination of plumage characters (Hellmayr 1925, Zimmer 1934, Todd 1948, Zimmer & Phelps 1948, Phelps & Phelps 1955). Thus, they could be regarded as good candidates to be ranked as species under the phylogenetic species concept (Cracraft 1983, 1997). The major taxonomic puzzle within this group is the status of *neblinae*, a taxon based on a single specimen from Cerro de la Neblina on the Venezuelan-Brazilian border (Phelps & Phelps 1955) which, in spite of concentrated research effort in the same area, has not been collected again, although it was seen once (Willard *et al*. 1991).

Until recently, the eastern limit of the genus *Xiphocolaptes* in Amazonia was considered to be the western bank of the river Xingu. During our studies of the birds of the Serra dos Carajás (06°00'S, 51° 20'W), a plateau region (300-800 m) located between the rivers Xingu and Tocantins/Araguaia, two specimens of a new population of *Xiphocolaptes* were collected in 1985 and 1986. Graves & Zusi (1990) recorded two further specimens of this population collected 52 km SSE of Altamira, east bank of the river Xingu (03°39'S, 52°22'W) in 1986. We located another specimen in the ornithological collection of the Museu de Zoologia da Universidade de São Paulo (MZUSP 65866), that was collected by J. Hidasi at Itupiranga (05°09'S, 49°20'W), Pará, on 11 June 1967. Finally, another specimen was collected by J. Roma, M. Henriques and D. Pimentel at São João do Araguaia, Serra das Andorinhas (06°09'S, 48°42'W), Pará, on 31 August 1995.

In this paper, we compare the plumage and body measurements of the specimens of *Xiphocolaptes* collected between the rivers Xingu and Tocantins/Araguaia with specimens collected between the rivers Tapajós and Xingu to determine if this recently discovered population represents a new taxon within the *orenocensis* group, or if it is *paraensis*, the geographically closest relative. In addition, we suggest that the region between the rivers Xingu and Tocantins/Araguaia should be ranked as a centre of endemism for the South American avifauna. Finally, we discuss why the Belém Centre, unlike other Amazonian centres of endemism, has no large woodcreeper of the genera *Hylexetastes* and *Xiphocolaptes*.

Methods

We obtained data from all known specimens of the recently discovered population. We compared these specimens with those of the geographically closest relative, *paraensis*. Specimens are housed at the National Museum of Natural History (NMNH), Carnegie Museum of Natural History (CM), Museu Paraense Emílio Goeldi (MPEG), and Museu de Zoologia da Universidade de São Paulo (MZUSP).

Plumage characters were described according to Smithe (1975, 1981). Where possible, the following body measurements were taken for each specimen: wing length (flattened); tail length; total culmen (bill length measured from the insertion of the bill to skull to the tip); bill from nostril (bill length measured from the anterior edge of the nostril to the tip of the maxilla); and tarsus length. To evaluate if there is a significant difference in body measurements across the river Xingu, males (the number of female specimens was too small for any comparison) of the recently discovered population and *paraensis* were compared. Body measurements ($\log_{10}$-transformed) were compared using t-tests. We generated a linear discriminant function to evaluate whether specimens of the new population and *paraensis* are separated correctly, based only on body measurements. All statistical tests were made using SYSTAT 7.0.

Results

Plumage variation

The population between the rivers Xingu and Tocantins/Araguaia shares several plumage characters with *paraensis,* such as the general plumage pattern as well as tail, rump, wing, upper-parts and crown colour. However, there are important differences in the colouration of the under-parts, in the width and colour of the upper-part streaks, and on the stripe width in the pileum and head. These characteristics were not variable in the specimens we examined.

Body measurements

Apart from bill from nostril, all body measurements of males of the new population and of *paraensis* are significantly different (Table 1). In general, the specimens of the new population are significantly smaller than those of *paraensis* (Table 1). Between specimens of the new population and *paraensis*, there is no overlap in wing, tail, and total culmen measurements, a small overlap in tarsus, and extensive overlap in bill from nostril (Table 1). By combining all body measurements in a linear discriminant function, the individuals of the two groups are 100% correctly classified.

Description of the new taxon

All specimens of the recently discovered population of *Xiphocolaptes* from the region between Xingu and Tocantins/Araguaia can be easily separated from the specimens of *paraensis*, based on both plumage characters and body measurements. Both suites of characters have a discontinuous variation across the river Xingu, as one could expect if these characters were result of genetic-environmental interactions (Barrowclough 1982). Based on this assessment, we propose that the specimens from the region between the rivers Xingu and Tocantins/Araguaia represent a new phylogenetic species, which we name:

***Xiphocolaptes carajaensis* sp. nov., Carajás Woodcreeper**

Holotype. MPEG 38284, male (skull 100% ossified; testes 6 x 3 mm; no bursa), collected 21 July 1986 by José Maria Cardoso da Silva and Manoel Santa Brígida at Caldeirão, Serra dos Carajás (06°00'S, 51° 20'W), municipality of Parauapebas, Pará, Brazil.

Diagnosis. Similar to *X. paraensis* from Santarém, the geographically nearest phylogenetic species, but differs by the under-parts Clay Color (#26) rather than Antique Brown (#37), upper-parts with narrower and less conspicuous streaks, significantly shorter wing, tail and bill (Table 1) and, on average, narrower streaks on crown and head (Figure 1).

Description of the holotype. Black pileum with rachis Clay Color (#26); upperparts Cinnamon-Brown (#33); rump Hazel (#35); tail upper surface Chestnut (#32); throat whitish; breast Clay Color (#26) with the streaks Pale Horn (#92) bordered with Grayish Horn (#91); flanks Clay Color (#26); belly Pale Horn (#92) with small dark interrupted bars; undertail coverts Buff (#124) with bars Grayish Horn (#91); underwing coverts Pale Horn (#92) with Olive-Brown (#28) bars. Undersurface of the remiges Cinnamon-Rufous (#40). Iris red, maxilla black, mandible grey with dark spots in the distal parts; tarsi greenish.

***Measurements** (mm) of the holotype*. Bill from nostril 29.2, culmen 37.7, wing 125.0, tail 115.0, tarsus 30.2, Mass 114.0 g.

Paratype. MPEG 37216, collected by Manoel Santa Brígida and Rosemiro Pereira 27 June 1985 at Manganês, Serra dos Carajás, municipality of Parauapebas, Pará, Brazil.

Measurements (mm) of the paratype. Culmen 51.0, bill from nostril 38.5, wing 127.0, tail 113.2, tarsus 31.6 mm.

Etymology. The name is derived from the region (Serra dos Carajás) where the holotype was collected.

Habitat. At the Serra dos Carajás, the new taxon was collected and recorded in both tall mature terra firme forest (Manganês) and riverine várzea forest (Caldeirão). At both sites, only two individuals were recorded, even though intensive efforts were directed at these sites.

Specimens examined. *Xiphocolaptes carajaensis*. Brazil, Pará: Serra dos Carajás, Caldeirão (MPEG, 1 male, holotype) and Manganês (MPEG, 1 male, paratype); Itupiranga (MZUSP, 1 male); Xingú (NMNH, 1 male and 1 female); São João do Araguaia (MPEG, 1 male). *Xiphocolaptes paraensis*. Brazil, Pará: Lago Batista (3

TABLE 1
Comparisons of the measurements of *Xiphocolaptes paraensis* and *X. carajaensis*.
Data are: range, mean ± standard deviation (n).

Measurements	*X. paraensis*	*X.carajaensis*	t-test
Wing	134.0-151.0, 142.8±6.2 (9)	121.0-129.0, 126.1±3.0 (5)	t_{12}=5.8, $p<0.001$
Tail	121.0-128.0, 125.4±2.8 (6)	108.0-115.0, 111.4±3.2(4)	t_8=7.2, $p<0.001$
Culmen	51.2-59.5, 55.1±2.7(8)	46.6-51.0, 49.4±1.8(5)	t_{11}=4.2, $p<0.01$
Bill from nostril	36.0-47.9, 40.2±3.4(8)	32.7-38.5, 36.6±2.4(5)	t_{11}=2.0, $p>0.05$
Tarsus	30.5-35.3, 33.0±1.7(9)	28.4-31.6, 29.8±1.3(5)	t_{12}=3.5, $p<0.01$

males, including the holotype; 1 male immature); Estrada Santarém-Cuiabá, km 84 (MPEG, 2 males) and km 212 (MPEG, 1 male); Pará, Santarém (CM, 1 male; MZUSP, 1 ?), Colônia do Mojuí (CM, 1 male), and Apaci (CM, 1 female); Mato Grosso, Fazenda São José, Rio Peixoto de Azevedo (MPEG, 1 male).

Discussion

The status of the new phylogenetic species under the biological species concept

A comprehensive programme of conservation and sustainable use of the biological diversity of a region will depend on having all taxonomically distinct, diagnosable populations identified and named. From this perspective, the species concept used by taxonomists has an important role (Cracraft, 1997). For instance, several methodologies to pinpoint priority areas for conservation and management (e.g., identification of areas with high number of endemic species or restricted-range species) may be influenced by how taxonomists recognise and delimit species. In ornithology, discussion on the species concept is becoming more frequent after more than 50 years dominated by the biological species concept [BSC; see McKitrick & Zink (1988) and Haffer (1992) for contrasting viewpoints].

An alternative to BSC is the Phylogenetic Species Concept (PSC): "a species is the smallest population or group of populations within which there is a parental pattern of ancestry and descent and which is diagnosable by unique combinations of character states" (Cracraft 1983). There are several reasons to use the PSC rather than BSC in studies on avian speciation, phylogeny reconstruction, geographic variation and biogeography (McKitrick & Zink 1988, Cracraft 1989). More recently, Cracraft (1997) listed several practical and theoretical reasons for using phylogenetic species rather than biological species in conservation biology.

Although ornithologists are moving toward the use of the phylogenetic species concept (Zink 1997), most current avian taxonomy is based on the biological species concept (Snow 1997). It is useful therefore to evaluate the status of the new phylogenetic species also under the framework of the biological species concept.

Although taxa comprising the *orenocensis* group are diagnosable and are not known to intergrade along their ranges, they should probably be grouped into a

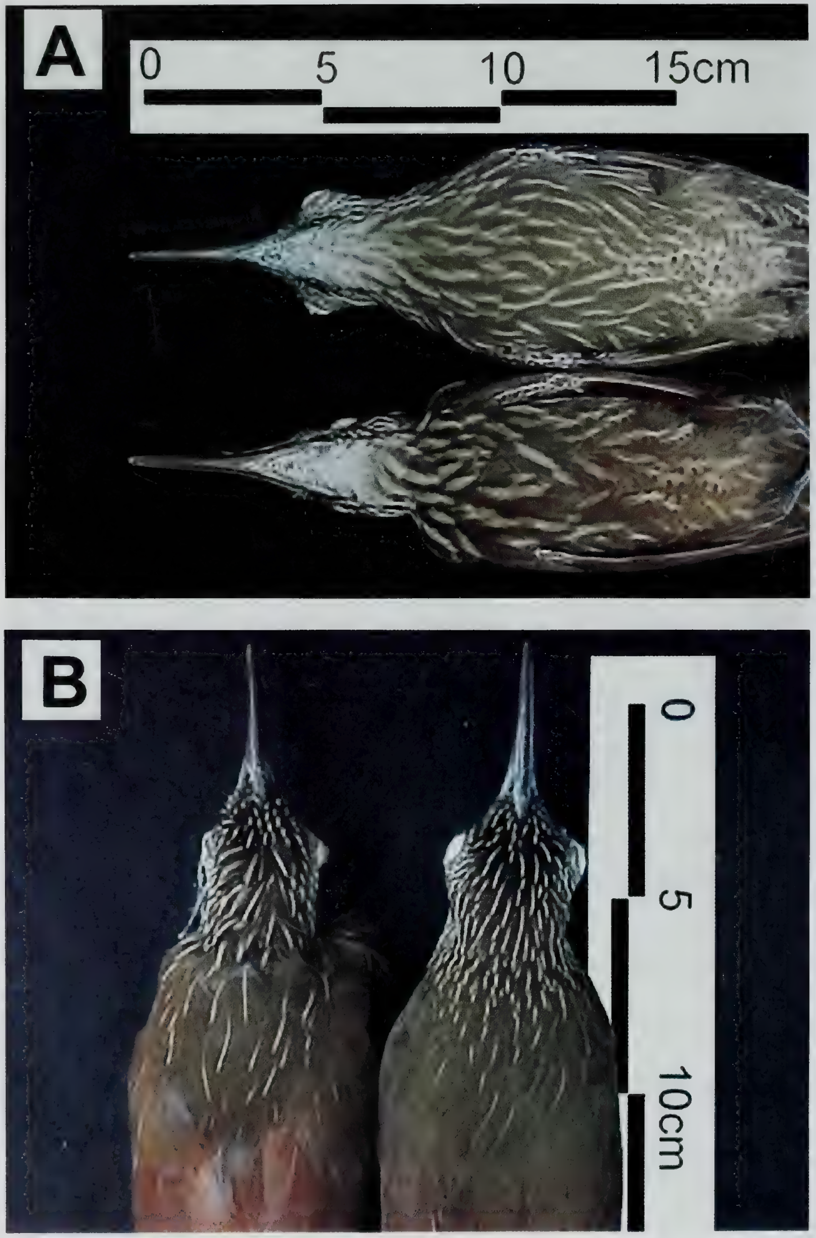

Figure 1. Differences between *Xiphocolaptes carajaensis*, from the region between rivers Xingu and Tocantins/Araguaia, and *X. paraensis*, from the region between rivers Tapajós and Xingu. (a) Ventral aspect: lower, *X. paraensis*; upper, *X. carajaensis*. (b) Dorsal aspect: left, *X. paraensis*; right, *X. carajaensis*.

single biological species, because the strong similarities in plumage colouration among close relatives may indicate a potential to interbreed if these taxa came into contact. At least at this stage of knowledge on the natural history and distribution of *Xiphocolaptes*, *X. carajaensis* should be ranked as a subspecies of *X. promeropirhynchus* or *X. orenocensis* under the biological species concept.

The region between the rivers Xingu and Tocantins deserves to be classified as an area of endemism for birds

In the most recent attempt to identify the South American avian centres of endemism, Cracraft (1985) recognized 33 centres, four of which are in the Amazonian forests south of the Amazon: South Amazon (Inambari) Centre, Rondônia Centre, Pará Centre and Belém (Maranhão) Centre. The region between the rivers Xingu and Tocantins/Araguaia was grouped with the region between the rivers Tapajós and Xingu into the Pará Centre (Figure 2).

Cracraft (1985) listed 20 taxa as endemic to the Pará Centre. Some of them (e.g. *Pipra pipra separabilis*) occur indeed on both banks of the Xingu, but others occur only on one bank (e.g. *Pipra vilasboasi*). Recent studies have led to several taxonomic discoveries in the region between the rivers Xingu and Tocantins/Araguaia, supporting the case for this region to be ranked as a distinct centre of avian endemism. Endemic taxa that support this suggestion include: *Psophia viridis interjecta*, *Pyrrhura perlata*

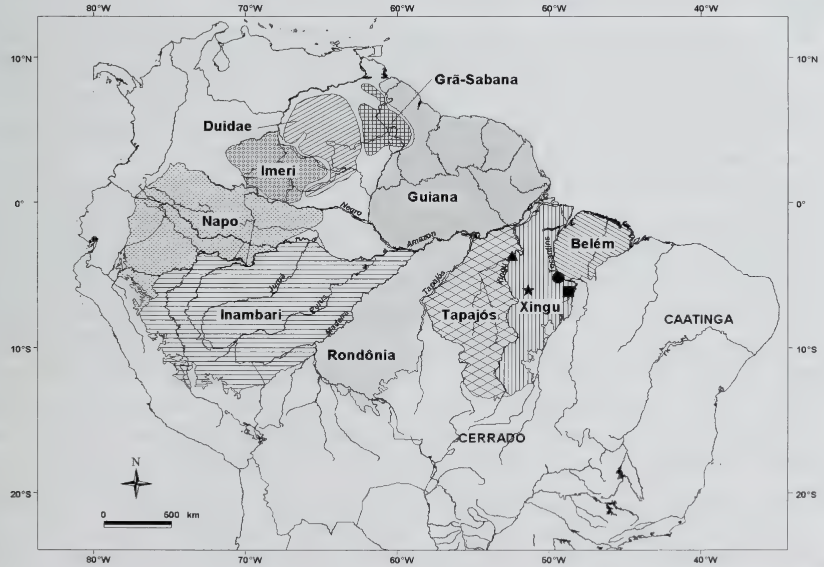

Figure 2. Distribution of *Xiphocolaptes carajaensis* in relation to avian areas of endemism identified for Amazonia. Duida and Grã-Sabana are sub-areas of endemism of the Panteupui area of endemism. Xingu and Tapajós areas were originally grouped into a single region named Pará. The localities of *X. carajaensis* are as follows: Serra dos Carajás (star), Xingu (triangle), Itupiranga (circle) and São João do Araguaia (square).

anerythra, *Hylexetastes brigidai*, *Xiphocolaptes carajaensis*, an undescribed phylogenetic species of *Dendrocincla* (Oren & Pinto-Henriques, unpublished), *Phlegopsis nigromaculata confinis*, *Pyriglena leuconota interposita*, *Conopophaga aurita pallida*, and *Procnias alba wallacei*.

An odd biogeographic pattern: why does the Belém Centre lack a large woodcreeper?

The largest woodcreepers in Amazonia are represented by species of *Xiphocolaptes* and *Hylexetastes*. At least one species of these two genera is recorded in the Amazonian areas of endemism, the exception being the Belém Centre. *Hylexetastes* occurs north and south of the Amazon, but is not known from the Belém Centre. *Xiphocolaptes* occurs in most of Amazonia, except the Guiana and Belém centres. This is an odd biogeographic pattern that deserves an explanation. Lack of a species in a region, in which it could be expected, might be due basically to three reasons: (a) the region is still poorly-sampled for birds; (b) ecological reasons; (c) historical reasons.

The Belém Centre is probably the Amazonian biogeographic region that has received the greatest attention from ornithologists during the last century (Oren & Albuquerque 1991). Although there are some areas of the Belém Centre that have never been sampled for birds, it is hard to imagine that the two largest woodcreeper genera in this entire region have simply been overlooked.

Hylexetastes and *Xiphocolaptes* might be absent from the Belém Centre because one or more essential ecological factors are lacking in this region. Differences in forest structure and composition, climate, likelihood of fires and the presence of potential competitors are some of the factors that might be suggested. However, none of them alone can explain this pattern well.

Finally, the absence of these genera from the Belém Centre might be due to historical reasons. Either these genera have never been in the Belém Centre, or they were present but have gone extinct. *Hylexetastes* is a genus endemic to Amazonia, with no representative outside this region. Thus, although we cannot rule out the hypothesis that *Hylexetastes* colonized and later went extinct in the Belém Centre, *Hylexetastes* may alternatively have never expanded its range towards the Belém Centre. This is not the case in *Xiphocolaptes*, which has a widespread range with at least one species in all major regions of tropical South America. In all centres of endemism around Belém (Guiana is the only exception), the genus *Xiphocolaptes* is represented: to the west, *X. carajaensis* is found; to the south-east, *X. falcirostris*, a bird associated with the dry forests of the Caatinga region, including part of Maranhão, occurs. Finally, *X. albicollis*, a species associated with Atlantic Forest, and that also inhabits the gallery forests of the Cerrado Region (Silva 1995b), is found south of the Belém Centre.

Based on this unexpected gap in its range, the absence of *Xiphocolaptes* in the Belém Centre is more parsimoniously explained by local extinction rather than any other hypothesis. There are some reasons to think that paleoecological dynamics could have caused several extinctions in the Belém Centre. Endler (1982) pointed out that the Belém Centre is a peninsula of forest, isolated on one side by the Atlantic Ocean, and on two other sides by Cerrado and Caatinga. Because a peninsula of forest receives gene flow and dispersing individuals from fewer directions than do central populations with forest on all sides (Endler 1982), either differentiation in peripheral populations (Mayr 1963) or extinctions of large species with low densities, such as *Hylexetastes* and *Xiphocolaptes*, are amplified. This may result in areas of endemism that are characterized by both a number of endemic species and unexpected absence of some widespread taxa, such as the large Amazonian woodcreeper genera.

Acknowledgements

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Extension of the known range of the Red-shouldered Vanga *Calicalicus rufocarpalis* in southwest Madagascar

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Madagascar has been isolated from the African landmass for some 165 million years and, as a result, most of its plants and animals have evolved in isolation. Over 50% of Madagascar's breeding birds are endemic. Although our knowledge of the status and distribution of these species has improved in recent years, much basic information remains unknown. In particular, the species inhabiting the subarid thorn scrub of the far southwest of Madagascar have been little studied.

The Red-shouldered Vanga *Calicalicus rufocarpalis* was first described in 1997 (Goodman *et al.* 1997). This description was based on two females, collected from two locations near La Table, 13-20 km southeast of Toliara, in 1948 (Fig. 1). More recently, in 1991, a probable male was photographed at a nest 17 km southeast of Toliara, and in 1998 an expedition further south located birds at Vohombe, Lavavolo and Antsihanaka (ZICOMA 1999). These latter records represented the southern limit of the known range of the species. Following consultation with Frank Hawkins (BirdLife International) and experts from Projet ZICOMA (Zones d'Importance pour la Conservation des Oiseaux a Madagascar), it was decided to undertake a joint expedition to southwest Madagascar in 2000, to determine if the species was present in previously unsurveyed areas.

Methods

Surveys were carried out close to the villages of Lintsa (22-24 October) and Itampolo (30 October), between 0530 h and 1030 h, and 1530 h and 1800 h. These times were chosen to reflect the main periods of bird activity. The survey method was to walk slowly along paths through the scrub, recording all species seen or heard, but paying particular attention to records of Red-shouldered Vangas. We played a tape of Red-shouldered Vanga song at regular intervals, in an attempt to elicit responses from any birds present.

Results and Discussion

We located a minimum of nine singing male Red-shouldered Vangas within a 2 km radius of the village of Lintsa (25°00'S 44°24'E), and one singing male was found *c.* 3 km E of Itampolo (24°41'S 43°58'E). Photographs and sound recordings were taken at both sites. Our record of a singing male Red-shouldered Vanga close to Itampolo is within the known range of the species, as determined by ZICOMA (1999). However, we also found a population close to Lintsa, *c.* 50 km southeast of the southern limit of the previously known range of the species, extending its known range.

Male and female Red-shouldered Vangas are similar to the respective sexes of the Red-tailed Vanga *Calicalicus madagascariensis*, which inhabits the same region, but there are several distinctive differences (see Hawkins *et al.* 1997 for details). S. Zefania was familiar with both species, after a previous visit to the region in 1998, and we are confident that our observations were accurate.

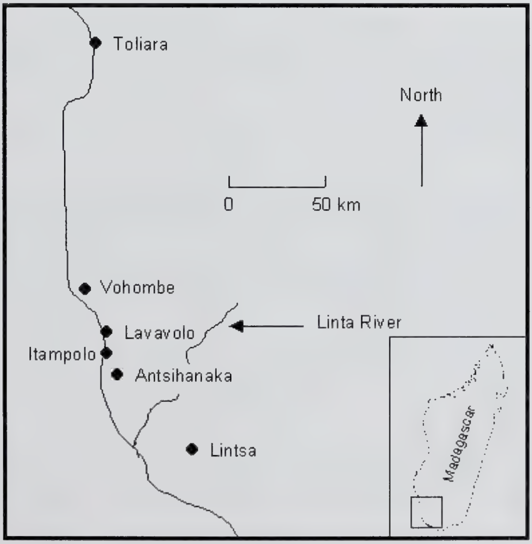

Figure 1. Location of sightings of Red-Shouldered Vangas in southwest Madagsacar.

All sightings were in areas of semi-degraded subarid thorn scrub. The region is relatively densely populated, with many small villages scattered throughout the forest. Some parts of the forest have been cleared for timber, charcoal and agriculture, and low densities of livestock (mainly zebu and goats) are grazed throughout. The area suffers from annual droughts and is under increasing human pressure.

Hawkins *et al.* (1997) speculated that the range of the Red-shouldered Vanga might extend up to 250 km south from Toliara, since there was an abundance of suitable habitat close to the coast. Our observations have confirmed that the species is present in good numbers at least as far south as Lintsa and, given that similar habitat exists to the south and east, it seems likely that the range of the Red-shouldered Vanga extends beyond our survey area. More survey work is needed to determine more precisely the range of this, and other, threatened species, in this remote region of Madagascar.

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The first nest and egg records of Black-eared Ground Thrush *Zoothera cameronensis*, Budongo Forest, western Uganda.

by *Jeremy A. Lindsell*

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The Black-eared Ground Thrush *Zoothera cameronensis* is a poorly known forest understorey species of equatorial Africa. Its obscurity is reflected in the confusion that has existed over the identity of certain specimens collected in western Uganda and in the Democratic Republic of Congo (DRC, formerly Zaire) during the early to mid 20th century (Prigogine 1965, 1978, Friedmann & Williams 1968, Dranzoa 1994, Lindsell unpublished). This confusion centred on the distinction between the *batesi* race of Grey Ground Thrush *Zoothera princei* and the then newly recognised eastern *graueri* race of *Z. cameronensis*. To date, all such distinctions continue to rely purely on morphology as no behavioural or other biological data exist for *Z. cameronensis*.

Z. cameronensis has been recorded from Cameroon, Gabon, the DRC and Uganda (Clement & Hathway 2000). It is known in Uganda from Budongo and Bugoma Forests, and Kibale Forest, if the form *kibalensis* is considered to be this species (Britton 1980, Urban *et al.* 1997). Erickson Wilson (1995), later followed by Rossouw & Sacchi (1998), listed *cameronensis* as occurring in Bwindi Forest but neither Kalina & Butynski (1996) nor Carswell *et al.* (in press) consider there to have been a record from Bwindi. *Z. princei* is known in Uganda only from Semliki Forest (Dranzoa 1994; Lindsell unpublished) with specimens collected from there being held at Makerere University Department of Zoology Museum (R. Kityo, pers. comm.).

Neither Urban *et al.* (1997) nor Clement & Hathway (2000) described any behaviour for *Z. cameronensis,* other than that it forages on the ground and scratches in leaf litter. Vocalizations were not described, though the British Library holds recordings from birds in the hand (Wildlife ref. no. 80385, cc2414 & cc2413, R. Ranft pers. comm.). Breeding information is restricted to data from specimens; Urban *et al.* (1997) noted breeding condition females in Zaire and Uganda in May and June, fledglings there in May, breeding condition males in Gabon in December to January, and an immature in June.

I present here the first observations of the nest and eggs of *Z. cameronensis* and discuss these with respect to *Z. princei* and habitat selection.

Location of records

Budongo Forest Reserve is situated in western Uganda between 1°37' and 2°03'N and 31°22' and 31°46'E. The forest is moist, tall and semi-deciduous and naturally dominated by one tree species, *Cynometra alexandri* (Eggeling 1947). The reserve occupies *c.* 793 km^2, of which the forested section is 428 km^2. All breeding records of *Z. cameronensis* were made in one management compartment of the forest of *c.* 7.5 km^2, classified as '*Cynometra*-mixed' forest (Eggeling 1947). This compartment was set aside in the 1930s as the Nyakafunjo Nature Reserve, and has never been commercially logged. The dominant tree species is *Cynometra alexandri*, but there are also many mahoganies (*Khaya* and *Entandrophragma*) in the canopy, which is one of the tallest in East Africa. The understorey is noticeably clearer (up to 50 m horizontal visibility) than the surrounding compartments which were selectively logged and treated with arboricide, and the forest floor is largely covered with a low growing herb (*Leptaspis*). The only verifiable report of a *Z. cameronensis* in Budongo away from this compartment is of a single bird seen in the Kaniyo Pabidi section of the reserve in July 1999 (Borrow 2000 and pers. comm.) in forest with a similar structure, though lacking a thick herbaceous ground layer.

Breeding observations

Five nests were located in September and October 1999 (14, 21 and 28 September and two on 6 October). Nests were located from repeated observations of adult birds in a restricted locality, searches of clusters of dead leaves lodged in understorey shrubs, or observation of adult birds flushing from bushes. Four nests were within 1 m of a research trail and one was within 8 m, though with no intervening vegetation. All the nests were within an area of 50 ha.

Sitting adults were extremely shy and left the nest when an observer was still up to 25 m away. This behaviour contrasted markedly with common forest species such as greenbuls (*Pycnonotidae*) and some other Turdidae which allow observers to come as close as 1 m and even to be picked up off the nest (Keith *et al.* 1992). Flushed birds returned to the nest within 1–2 min.

Given their proximity and timing it is likely that two nests were from one pair of birds (see below). One of the five nests was inactive but identified on the basis of similarity of construction to the other four nests. Adult birds were seen attending all four active nests and eggs were eventually found in all four.

Nest

All nests were open cups, loosely built of dead leaves, some twigs and dry bark with many hair-like strands (fungus). These strands were woven loosely to form the cup shape, but there was no mud lining. The internal diameter of one cup was 80 mm and depth 45 mm. The nest was always a self contained unit, not built into natural gatherings of dead leaves but often in a clear fork of a shrub, 1.2 - 3.5 m above ground with three at *c.* 2 m. One nest was built into the fork of a fallen dead branch which hung precariously in the outer twigs of an understorey shrub; the nest was unattached to the living shrub. Three were in isolated shrubs (*Rinoria)*, one was just below the crown of a many-stemmed shrub (*Acalypha*) and one was in the fork of a small tree (10 cm dbh) situated in a relatively dense area of understorey shrubbery. In all cases the sitting adult had a largely unobstructed view across the forest floor, often for 360°.

Clutch

Two clutches were of three eggs and two were of two eggs (mean 2.5). The eggs were gently tapered, pale turquoise/blue with brown speckling, denser towards the broad end with sometimes a clear patch on the broad end resulting in a halo of speckling. The degree of speckling varied with some having dense fine speckles and others having less dense and larger speckles. One measured egg was 18 mm x 26 mm with a mass of 4.7 g (prior to onset of incubation).

The timing of laying in one nest is worth noting: the nest was found empty at 0830 h on day one. By 0650 h on day 2 the first egg was laid, and the second egg by 1645 h on the same day. The adult was still sitting on two eggs at 1700 h on day 3, but on three eggs at 0700 h on day 4.

Nest survival

All four active nests were eventually predated. In all cases the eggs were removed without the nests being damaged. The first nest was empty on the day after discovery. In the second nest, a single egg was predated from the clutch of two on day 10 or 11 after discovery, but the adult continued to incubate the remaining egg for at least the next 4 days; but by day 17 the nest was found to be empty. The third nest was discovered before the clutch was laid. Two eggs were laid on day two and a third by day four. The nest was predated by day eight. The fourth nest contained one egg for the first two days, a second egg on day three and a third egg by day five. This nest was predated by day nine. Two nests were within 90 m of each other with the second being discovered 22 days after the first nest was depredated. This suggests a renesting attempt. The first nest is deposited as a specimen with Makerere University Department of Zoology Museum and the fourth nest with the Natural History Museum, Tring.

Discussion

These observations are very similar to those recorded for Grey Ground Thrush *Zoothera princei*. That species builds a ‘bulky open cup of twigs, dead leaves and plant stems… lined with rootlets and plant fibres… situated 1.5–3 m above ground in fork in centre of crown of small isolated tree in understorey’ (Urban *et al.* 1997, and see photo in Brosset & Erard 1976). *Z. princei* eggs are ‘turquoise-blue to emerald green spotted and blotched with red-brown over lilac undermarkings’ (Urban *et al.* 1997). Serle (1957) noted that what he presumed were *Z. princei* eggs were markedly truncated at the broad end. Brosset & Erard (1976) wondered about the identity of Serle’s observations since the eggs they found for *Z. princei* were not distinctly truncated and were also slimmer and less spotted. Serle’s eggs measured 22.8 x 19.6 mm and 23.6 x 19.5 mm and Brosset & Erard’s was 25 x 18 mm. The egg described in this paper was closest to the dimensions of Brosset & Erard’s; it also differed from Serle’s in having heavier spotting towards the broad end (with the exception of the very end in some cases) and was not distinctly truncated. The mean clutch size reported here for *Z. cameronensis* at 2.5 does not differ greatly from the 2.2 reported for *Z. princei* from nine clutches (Urban *et al.* 1997).

Although it must now be concluded that *Z. princei* is not known from Budongo or Bugoma Forests where *Z. cameronensis* occurs (Lindsell unpublished *contra* Urban *et al.* 1997 and Clement & Hathway 2000), Plumptre (1997) caught both species (along with *Z. crossleyi* and *Z. oberlanderi*) in the Ituri Forest, DRC. They were not at exactly the same sites but very close to one another (Plumptre pers. comm.). Brosset & Erard (1977) also reported both species occurring at the same site, so it seems that both species can co-exist, which caused these authors to wonder as to their ecological distinction.

Brosset & Erard (1986) noted the conspicuous location of *Z. princei* nests (as did Serle 1957 if his record was of *Z. princei*). This was also found for *Z.*

cameronensis. Brosset & Erard (1977) considered *Z. princei* to prefer thick undergrowth, but field observations of foraging *Z. cameronensis* suggest a preference for a more open understorey in accordance with their nesting sites (pers. obs.). Once detected, *Z. cameronensis* has not proven shy to observe.

All breeding records in Budongo came from one forest compartment, which was also the only location (besides one recent sighting in Kaniyo Pabidi (Borrow 2000)), where field sightings and mist net captures have been made. Uganda's Forest Department conducted 59,795 metre net hours of mistnetting in Budongo and caught no *Z. cameronensis* (Howard *et al.* 1996). Owiunji (1996) caught no individuals in 2085 captures and Plumptre (pers. comm.) caught only one in 1909 captures. Subsequently there have been a number of captures and sightings but all within the same compartment (Owiunji 1998 and personal data). Areas of the forest adjacent to, but not within, this compartment have been equally well surveyed, and in some cases more so, but with no records. These surrounding areas have all been selectively logged and/or treated with arboricide in the past (Plumptre 1996). Though the canopy is often complete, the understorey is much thicker and rarely resembles the structure found in the preferred compartment. This implies that *Z. cameronensis* is highly restricted in this part of its range, persisting in only pristine forest conditions, apparently where *Cynometra alexandri* dominates. The only other locality in Budongo with a sight record is also dominated by this tree.

Finally, it is worth highlighting the ease with which nests were located. Though this may have had implications for the nesting success for this species, it does provide a method by which this species' status and biology may be investigated. Mist-nest captures are fairly rare, as are field sightings (Clement & Hathway 2000), but the discovery of five nests in a relatively restricted area of forest and in such a short period of time should encourage further efforts.

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Erroneous and unconfirmed bird records from Belize: setting the record straight

by H. Lee Jones

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Ideally, a bird species should not be included on any country list without proper documentation, no matter how many times the bird has been reported, how likely it is to occur, or how easy it may be to identify. Documentation need only consist of enough information to eliminate all other species conclusively. Sometimes this is straightforward, sometimes not. If the credentials of the person reporting the species are not known, then it is helpful (but not mandatory) if the bird is photographed or more than one person sees and reports on the bird. For difficult-to-identify species, documentation of the record can be more challenging, even for a seasoned veteran. In these cases, detailed notes with field sketches and, ideally, a photograph or specimen may be necessary, or a tape-recording of calls/song where appropriate.

Until a country's expected avifauna has been clarified, it may be hard to know which species are rare enough to warrant documentation. Consequently, for countries with a relatively poorly characterized avifauna, few sight records are likely to be adequately documented. The "accepted" list is primarily specimen based. Such was the case for Belize (then British Honduras) when Russell (1964) published the first reasonably comprehensive avifauna for the country. Since 1964, birding has become increasingly popular in Belize. With this growing popularity, the number of sight records has increased exponentially. Many, if not most, sight records of rare and unexpected species, including first country records, were inadequately documented, if at all. In some instances, birds were added to the popular checklists of the time based solely on verbal communications. For these, no permanent record exists, and details such as date, locality, observer, and description, if any, have long since been lost or forgotten.

A significant part of the problem in understanding which species were and were not expected to occur in Belize was the result of: (1) birds that were poorly illustrated in the available field guides (e.g., Yellow-bellied Elaenia *Elaenia flavogaster*, various hawks), (2) a lack of understanding of the range of plumage variation (Ferruginous Pygmy-Owl *Glaucidium brasilianum*, Summer Tanager *Piranga rubra*, Black-cowled Oriole *Icterus prosthemelas*), (3) taxonomic confusion (nightjars and potoos), (4) distribution (White-throated Swift *Aeronautes saxatalis*, Rufous-winged Tanager *Tangara lavinia*, etc.), and (5) potential for vagrancy (Pine Warbler *Dendroica pinus*, Lark Bunting *Calamospiza melanocorys*, Song Sparrow *Melospiza melodia*, etc.)

In the past decade, we have learned a lot about the expected avifauna, and conversely, the unexpected avifauna of Belize. The landmark *A guide to the birds of Mexico and northern Central America* (Howell & Webb 1995) was the turning point. Those authors questioned many records that had been generally accepted by the birding community, and even a few that were considered a regular part of Belize's avifauna. Of these species, many have since been documented, but some remain undocumented. Now is an appropriate time to review those which remain unverified for Belize.

This publication is my attempt to set the record straight. It is also a call for information. For some of the species discussed in the following accounts, supporting evidence for their occurrence may well exist in someone's field journal or, perhaps, as photographs, or even a misplaced specimen in a museum.

The following accounts are by no means the final word on this subject. They merely reflect my opinion based on the information at my disposal. The species included in these accounts have all appeared in literature, including peer-reviewed journals, informal trip reports published in local or regional journals, and popular checklists and other material generally available to the birding public. Such "publications" include the Belize Audubon Society Newsletter, all Christmas Bird Counts (CBCs), published or otherwise widely disseminated checklists, and manuscripts deposited in government offices or institutions, libraries, and the Belizean National Archives in Belmopan. I do not include records gleaned from unpublished field notes, personal correspondence, word-of-mouth, or unavailable data bases.

It is not my intention to embarrass or offend anyone whose records I may have included in the accounts below – only to bring to the attention of the reader those species included in documents and checklists in the public domain that I believe lack adequate supporting information, and those species that may have been misidentified based on a combination of the observer's lack of experience with birds in the region and his or her reliance on the limited and often inaccurate reference material available at the time. There is no question that some of the species listed below were, indeed, correctly identified. I myself have recorded species new to Belize that meet my personal criteria for acceptance, but for which I was unable to obtain documentation necessary for their general acceptance. For example, I have heard the distinctive calls of American Pipit *Anthus rubescens* in Belize, a species with which I am thoroughly familiar and which is also long overdue in Belize, but my hearing of a vocalization of an unseen bird without a tape-recording does not constitute adequate documentation for the species' inclusion on the Belize list. Someday the occurrence of American Pipit will be properly documented. At that time, my record will serve as supporting evidence for its occurrence in Belize.

While the opinions expressed and determinations made in this paper are mine alone, it is important to note that Belize is in the process of establishing a bird records committee, whose purpose will be to evaluate the validity of all claimed first country records (including those discussed in this paper), as well as other designated rarities. Its determinations may well differ from my own in some instances. The committee, expected to be operational by mid-2002, consists of seven voting members and a non-voting secretary. All records of birds thought to be extremely rare or unrecorded in Belize should be submitted to: Secretary (currently Carolyn Miller), Belize Bird Records Committee, Gallon Jug, Belize, Central America. For more information on the Belize Bird Records Committee, including a list of species to be evaluated by the committee, visit either www.belizebirds.com or the Belize Biodiversity Information System at http://fwie.fw.vt.edu/wcs/.

Species Accounts

SOOTY SHEARWATER *Puffinus griseus*

Listed by Wood *et al.* (1986), Garcia *et al.* (1994), Miller & Miller (1994, 1998b, 2000), Sargeant (1995), and Stotz *et al.* (1996). Miller & Miller (1998b, 2000) indicated that there are at least two records of this species by including it in their "Coastal Savannas" and "Cayes & Offshore" columns. I have been unable to locate any information whatsoever on this (these) record(s). Unless information on at least observer, date, locality, and circumstance is forthcoming, this (these) record(s) should be disregarded.

RUFESCENT TIGER-HERON *Tigrisoma lineatum*

An immature was reported by three observers near Chan Chich Lodge, western Orange Walk District, on 14 April 1994 (Mallory 1994) and described briefly: "…the throat was white and feathered." Because of the unprecedented nature of the record

– it has not been reliably recorded west of eastern Honduras (Howell & Webb 1995) – and the extreme brevity of the published description, the identification should be considered as tentative until such time as a pattern of occurrence in northern Central America is established. If a detailed written description of this individual was taken, it should be published.

RUDDY DUCK *Oxyura jamaicensis*

Listed by Sargeant (1995). Russell (1964) stated, "Eisenmann (1955a: 19) specifically includes British Honduras within the range of the species. I can find no basis for this inclusion. Mr. Eisenmann (*in litt.*) does not have the source of this record; consequently, the species should not be included on the list of British Honduran birds." I am not aware of any specific reports of this species in Belize.

BALD EAGLE *Haliaeetus leucocephalus*

Counsell (1988) published an "inconclusive sighting" of this species: an immature closely observed in flight at Guacamallo Bridge on 3 March 1986. Although it was seen by ten observers, one familiar with this species, and some field marks consistent with this species were recorded, the identification was considered tentative by the author. Miller & Miller (1998a), citing Counsell (unpubl. report), dismissed this record as "unlikely" but implied that it was reported, at least initially, as confirmed.

WHITE-BREASTED HAWK *Accipiter [striatus] chionogaster*

Sargeant (1995) included White-breasted Hawk but not Sharp-shinned Hawk *Accipiter striatus*, which is a regular but uncommon winter visitor in Belize. There are also unpublished reports of *A. chionogaster* in Belize that most likely pertain to juvenile Double-toothed Kite *Harpagus bidentatus*, which can appear similar. White-breasted Hawk was recently merged with Sharp-shinned Hawk by the AOU (1998). This well-marked form is a resident of the highlands of southern Mexico east to Nicaragua. Although some seasonal altitudinal movement may occur (Howell & Webb 1995), it would not be expected to reach Belize.

SWAINSON'S HAWK *Buteo swainsoni*

For a species whose occurrence in Belize has never been documented, the Swainson's Hawk has been reported surprisingly frequently. Weyer (1984), for instance, stated: "Although the migrating flocks do not fly over Belize, one or two are usually seen in a day's birdwatching during the fall and winter, and these birds apparently maintain winter territories in Belize. It has been suggested that Swainson's Hawks wintering in Central America are mostly immatures, but the birds sighted in Belize are in full adult plumage." She states further: "The black phase, often considered rare, is not uncommon here."

Wood *et al.* (1986) listed it as an uncommon transient and winter resident in four of six regions. Wood & Leberman (1987) reported three occurrences: 23 February 1983 (Caves Creek); 23-24 March 1984 (Columbia River Forest Camp, Toledo District); and 6 April 1984 (Hummingbird Hwy). Counsell (1988) reported one seen on 18 March 1986 at Guacamallo Bridge, Cayo District, but gave no details. Garcia *et al.* (1994) included it as an occasional transient, and it was listed by Miller & Miller (1994), Sargeant (1995), Stotz *et al.* (1996), and Edwards (1998). It was recorded on six of the first seven Belize City Christmas Bird Counts (1972-1978) and seven of the first ten Belmopan counts (1975-1984). Despite the seeming plethora of occurrences, Howell & Webb (1995) emphasized that reports from Belize require verification. Perhaps following their lead, Miller & Miller (1998a) discussed it under the heading "Problematic Species Requiring Verification in Belize," yet included it on both their original (1998b) and revised (2000) checklists.

Reports of this species in winter are probably erroneous as this species is rare and local north of South America in winter. The fact that most reports are of adults, and even more remarkably, of the rare dark morph, runs directly counter to what would be expected, as birds seen outside their normal migratory pathways are usually birds of the year, and there is no reason to believe that dark morph birds would be disproportionately represented. While it is likely that Swainson's Hawk may occur in Belize *as a very rare transient*, even its occurrence on migration has yet to be documented. In fact, despite the frequency of reports in the literature, I am unaware of any description *whatsoever* accompanying a claimed Swainson's Hawk in Belize. That so many records of *swainsoni* have been claimed in the past is due, in part, to the complexities of hawk identification coupled with (until recently) poor representation of hawks in the popular field guides, and in part to the generally poor understanding of the occurrence and seasonality of *swainsoni* in Central America, as demonstrated in Weyer's comments above. It is likely that most claims of *swainsoni* in Belize pertain to juvenal and 1st basic plumage White-tailed Hawks (*Buteo albicaudatus*), a closely related species with a complex array of immature plumages. Some may also pertain to the Short-tailed Hawk (*Buteo brachyurus*), another species that, like *swainsoni* and *albicaudatus*, may fly with its wings held above the horizontal plane and its outer primaries held closely adpressed.

PURPLE SWAMPHEN *Porphyrio porphyrio*

An Old World species listed, apparently in error, by Sargeant (1995) who does not list the Purple Gallinule (*Porphyrula martinica*), a locally common resident of Belize.

DOUBLE-STRIPED THICK-KNEE *Burhinus bistriatus*

Russell (1964) included this species based on a sight record by Lancaster and Verner in Belize City on the night of 11 February 1958. This record has been dismissed by all subsequent authors. Dr. Verner kindly sent me a copy of his field notes for that date 43 years ago, and they establish by both plumage description and vocalization that the bird was a juvenile night-heron, most likely Yellow-crowned *Nyctanassa violacea.*

PIPING PLOVER *Charadrius melodus*

M. H. Peck supposedly collected one at Manatee Lagoon, southern Belize District, in March 1901, but the specimen has never been located (Russell 1964).

BAIRD'S SANDPIPER *Calidris bairdii*
Listed by Wood *et al*. (1986), Garcia *et al*. (1994), Miller & Miller (1994), Sargeant (1995), and Stotz *et al*. (1996), but not by Miller & Miller (1998b, 2000) or Edwards (1998). Howell & Webb (1995, p. 276) included extreme southwestern Belize within its normal migration route but did not cite any specific records. While this species surely occurs in Belize on occasion as a vagrant or rare transient, I can find no published records and only one unpublished record, but the unpublished report does not meet the criteria for acceptance as a first country record.

GREAT BLACK-BACKED GULL *Larus marinus*
Listed as very rare ("1 record") by Wood *et al*. (1986), perhaps based on its inclusion on a list of birds seen at Caye Bokel, Turneffe Atoll, on 24-25 October 1983 (Anon. 1984). Howell *et al*. (1992) reported a 1st winter bird photographed in Belize City on 11-12 January 1989, but the photograph has never been critically examined and may have been lost. Based on this published record, it has been included in most reviews and checklists since (e.g., Miller & Miller 1994, 1998b, 2000; Howell & Webb 1995; Sargeant 1995; Stotz *et al*. 1996; Edwards 1998). Howell (pers. comm.) has not seen the photograph and no longer accepts the record. With other similar species now turning up (or being recognized for the first time) with some regularity in the Gulf of Mexico (Kelp Gull *Larus dominicanus*; Lesser Black-backed Gull *Larus fuscus*; Band-tailed Gull *Larus belcheri*), *L. marinus* should not be considered the "default" large, dark-backed gull in the region (cf. Howell & Webb 1995). Therefore, this species remains unverified for Belize and Central America. As it continues to expand its range southward, it may yet reach Belize, but extreme care is needed in attempting to identify any large, atypical gull in Belize regardless of plumage or perceived likelihood of occurrence.

ZENAIDA DOVE *Zenaida aurita*
Included by Wood *et al*. (1986), Garcia *et al*. (1994), and Miller & Miller (1994) based on an 1893 specimen in the Royal Ontario Museum, collected "50 miles back of Belize". The accuracy of the locality information accompanying this specimen has been questioned by Barlow *et al*. (1969) and Howell & Webb (1995).

NORTHERN PYGMY-OWL *Glaucidium gnoma*
Counsell (1988) mist-netted and photographed a pygmy-owl at the Guacamallo Bridge, Cayo District, on 8 March 1986 and mentioned two field marks that do not distinguish it from Ferruginous Pygmy-Owl *Glaucidium brasilianum*. Both Steve Howell (pers. comm.) and I have examined digital images of the original photograph, and believe the bird to be a "typical" *G. brasilianum*. According to Walters (1993), this species was also mist-netted and ringed on 24 February 1960 in western Cayo District, but he included no citation or details. It was included on the list of birds in Belize by Stotz *et al*. (1996), although Howell (1995) had expressed grave doubts about these records a year earlier. Most observers are unaware of the wide range of colour and pattern variation in *brasilianum*. Without regard to geography, some

individuals are rich rufous-brown above and others are dull grey-brown. Also, the tail pattern in *brasilianum* is highly variable, from pale rufous to dark brown with up to 8 paler or darker bars or no bars at all. Thus, attempting to differentiate *brasilianum* from *gnoma* on plumage characters alone is problematic. Without a specimen or diagnostic photographs, it is best told by its vocal differences.

TAWNY-COLLARED NIGHTJAR *Caprimulgus salvini*
Included by Wood *et al.* (1986) before it was generally recognized that the form occurring in the Yucatan Peninsula, including northern Belize, was a separate species–the Yucatan Nightjar *Caprimulgus badius* (AOU 1995). Perhaps anticipating the pending split of Tawny-collared and Yucatan Nightjars, but confused as to which one occurred in Belize, Garcia *et al.* (1994) included both *salvini* and *badius* in their checklist. Sargeant (1995), on the other hand, incorrectly included *salvini*, but not *C. badius*, in his list.

BUFF-COLLARED NIGHTJAR *Caprimulgus ridgwayi*
Hallchurch (1982) reported two heard near the Swasey Bridge on the Southern Highway on 8 March 1982. Because of confusion at that time in the literature and on commercial audiotapes about the proper assignment of vocalizations to the various Central American nightjars, coupled with the frequent taxonomic lumping and splitting of species in the *Caprimulgus* complex by various authors, it is most likely that what they heard was some other species. *C. ridgwayi* is almost exclusively a resident of the Pacific slope and highlands of Mexico and northern Central America (Howell & Webb 1995) and therefore most unlikely to appear in Belize.

GREAT POTOO *Nyctibius grandis*
Listed by Wood *et al.* (1986) as very rare in coastal savannas, by Garcia *et al.* (1994) without any status information, and by Sargeant (1995) and Stotz *et al.* (1996) without comment; however, reports from Belize were considered to be erroneous by Howell & Webb (1995). The inclusion of this species on lists of birds recorded in Belize is based, in part at least, on confusion of its vocalizations with those of the Northern Potoo *Nyctibius jamaicensis*, a fairly common resident. Older commercial tape recordings were often of the southern Common Potoo *N. griseus*, formerly considered conspecific with *jamaicensis*. *N. griseus*, which is not known north of Nicaragua (AOU 1998), has a very distinctive call, whereas *jamaicensis* has a vocal repertoire that is much more similar to that of *grandis*, especially when heard at a distance. *N. grandis* may well be a rare resident in southern Belize, and at least one experienced ornithologist familiar with *grandis* is confident he has heard it in Belize. However, a recognizable archived tape recording of this species in Belize should be the minimum criterion for acceptance.

BLACK SWIFT *Cypseloides niger*
Included by Sargeant (1995) without explanation.

WHITE-NAPED SWIFT *Streptoprocne semicollaris*

Listed by Garcia *et al*. (1994), Sargeant (1995), and Miller & Miller (1998b, 2000), apparently based on a report by Mallory (1994). Mallory reported 7-12 birds in the upper Raspaculo River area (from Cushta Bani downstream to near the Guacamallo Bridge) between 2 May and 3 June 1993. All of the birds had a prominent white nape but lacked the full white collar of adult White-collared Swifts *Streptoprocne zonaris*. She reasoned that it would be unlikely for an entire flock to be comprised of juvenile *zonaris,* which lack the full white collar. Additionally, according to Mallory, at least one bird seen clearly had a rounded tail, a characteristic of *semicollaris*. I have observed flocks of *zonaris* on several occasions in which most individuals lacked or appeared to lack the full white collar. Also, a widely spread tail, or one moulting the outer rectrices, can appear rounded. Because of the difficulty in observing key field marks on rapidly flying swifts, and the unprecedented nature of this record, it is best to consider this species' occurrence in Belize as, at best, tentative or inconclusive. The occurrence of *zonaris* in Honduras was considered highly tenuous by Monroe (1968), even though the evidence (multiple sightings over a ten-year period by a number of experienced observers) was much stronger than that presented by Mallory. Monroe, in fact, considered it more likely that these birds represented an undescribed species than the improbable *zonaris* so far out of range.

WHITE-THROATED SWIFT *Aeronautes saxatalis*

Included in Russell (1964) based on two or more sight records of multiple individuals and a nest collected on 27 May 1906 in the Cockscomb Mountains (Bent 1940; MCZ specimen no. 11748), although he included this species in brackets, as he did all records unsupported with specimens. The nest, which contained 5 eggs, proved to be that of *Chaetura vauxi*, not *A. saxatalis*, based on photographs provided by MCZ secretary Alison Pirie and examined by M. Marin (pers. comm.). Hallchurch (1982) reported 3 each at Big Falls, Cayo District, and Airport Camp, Belize District, on 5 March 1982, but did not provide any details or suggest that they were unusual. Perhaps, based on these records, it was included in Wood *et al*. (1986) as "very rare" in three regions. Garcia *et al*. (1994) and Miller & Miller (1994, 1998b, 2000) also included it in their checklists, but its occurrence in Belize was questioned by Howell & Webb (1995). Also, Edwards (1998) did not include it for Belize in his recently revised field guide.

GREEN VIOLET-EAR *Colibri thalassinus*

Included without explanation by Sargeant (1995).

EMERALD-CHINNED HUMMINGBIRD *Abeillia abeillei*

Listed by Wood *et al*. (1986) as rare in coastal savannas, by Garcia *et al*. (1994) as resident (no other status information given), and by Miller & Miller (1994), Sargeant (1995), and Stotz *et al*. (1996). However, Howell & Webb (1995) stated that reports from Belize "are not credible." The rationale for including this most unlikely montane species on the Belize list is not known.

GREEN-FRONTED HUMMINGBIRD *Amazilia viridifrons*
Hallchurch (1982) included this species on the basis of one mist-netted on 10 March 1982 at Blue Creek, Toledo District. Although he stated: "Description and measurements verified against skins in the British Museum…", he provided no description or measurements in his published account; thus, it cannot be independently evaluated. Miller & Miller (1998a) rightly questioned the record, and no other published list of which I am aware has included it.

MAGNIFICENT HUMMINGBIRD *Eugenes fulgens*
Listed by Miller & Miller (1994), Garcia *et al.* (1994), and Edwards (1998), probably based on its reported occurrence, without any descriptive information, in the Bladen Reserve by Brokaw & Lloyd-Evans (1987). This species superficially resembles the smaller Violet-crowned Woodnymph *Thalurania colombica* which, coincidentally, is found in Belize primarily in the Bladen Reserve and nearby areas in the Maya Mountains and foothills of central and western Toledo District.

RUFOUS HUMMINGBIRD *Selasphorus rufus*
Listed by Miller & Miller (1994) without explanation other than an accompanying asterisk, which indicates that it has occurred in the Chan Chich/Gallon Jug area of western Orange Walk District. Interestingly, it was also included by Edwards (1998) as accidental in Belize. The basis for this species' inclusion on the Belize list by these two authors is unknown to me.

BLACK-BANDED WOODCREEPER *Dendrocolaptes picumnus*
Included without explanation by Sargeant (1995).

PILEATED FLYCATCHER *Xenotriccus mexicanus*
This species first reached the attention of Belize birders with a brief exchange of letters in the Belize Audubon Society Newsletter (Vol. 26, No. 1, p. 15) in 1994. What began as an inquiry into the *possibility* of this species occurring in Belize, rapidly escalated to its being considered a common resident in the Cockscomb Basin Wildlife Sanctuary (Emmons *et al.* 1996). What caused the confusion was a poorly illustrated Yellow-bellied Elaenia *Elaenia flavogaster* in a popular field guide (Peterson & Chalif 1973). In life, the Yellow-bellied Elaenia more closely matches Peterson's illustrated Pileated Flycatcher, a southwest Mexican endemic, than it does his Yellow-bellied Elaenia. This species is still reported regularly to the author by local birders using Peterson & Chalif as their principal, or only, field guide.

EASTERN PHOEBE *Sayornis phoebe*
Reported on the 26 December 1978 Belmopan Christmas Bird Count, and on the 30 December 1979 Belize City Christmas Bird Count. Hallchurch (1982) reported without explanation *two* seen at Big Falls on 2 March 1982. Although the occasional occurrence of this species in Belize is possible, the likelihood of two occurring simultaneously in the same area so far from its normal winter range is exceedingly

slim, as virtually all out-of-range records are of single birds. Wood *et al.* (1986) stated that it is accidental, with "2 records". Additionally, Garcia *et al.* (1994) indicated that it is also accidental on the cayes, but the basis for this is unknown to me. Miller & Miller (1994), Sargeant (1995), and Stotz *et al.* (1996) also included it in their lists. Howell & Webb (1995) on the other hand stated that "reports from Belize...require verification." As it appears that no supporting information exists for any of these records, its occurrence in Belize should be dismissed. A specimen record exists from southern Quintana Roo within a few km of the Belize border (Peters 1913), so the possibility exists that it may yet be verified from Belize.

WESTERN KINGBIRD *Tyrannus verticalis*

Walters (1993) reported without explanation one banded near Dangriga on 16 April 1963, and Stotz (1996) also listed this species. A tourist, on his first trip to Belize, reported *verticalis* on 29 December 1993 (Anon. 1994). He described the bird as having white outer tail feathers and "whit" "whit-ker-whit" vocalizations. His brief description does not rule out juvenile Scissor-tailed Flycatcher *Tyrannus tyrannus*, which may sometimes appear yellow on the lower undersides, has a short black tail with white in the outer tail feathers, and similar vocalizations. Only in flight do its forked tail and bright pink under wing coverts become evident.

BELL'S VIREO *Vireo bellii*

Included without explanation by Sargeant (1995).

HUTTON'S VIREO *Vireo huttoni*

Listed as accidental by Wood *et al.* (1986), Garcia *et al.* (1994), Miller & Miller (1994), and Sargeant (1995), presumably based on an 1888 specimen that has since been re-examined (Phillips 1991) and determined to be a juvenile Plumbeous Vireo *Vireo plumbeus notia* of the resident Belize population. Walters (1993) cited two *huttoni* banded by Nickell on 22 March 1963 and 19 March 1965 but gave no supporting details, other than mention of the 1888 specimen as evidence for its occurrence in Belize.

CORAYA WREN *Thryothorus coraya*

Included without explanation by Sargeant (1995). This species is a native of South America and may have been inadvertently included in place of the similarly named Carolina Wren *Thryothorus ludovicianus*. The Carolina Wren, sometimes referred to as the White-browed Wren *Thryothorus [ludovicianus] albinucha*, is a local resident of northern and western Belize.

RUBY-CROWNED KINGLET *Regulus calendula*

An interesting account comes from the Belize Audubon Society Newsletter (Anon. 1984), in which Ray Ashton reported six on 25 October 1983 at Caye Bokel in the Turneffe Atoll during what must have been the most spectacular autumn migration fallout ever witnessed in Belize. Unfortunately, he gave no details of these observations other than his recognition that it was unrecorded in Belize. Mallory & Brokaw (1997) also included it in a list of birds of the Chiquibul Forest Reserve without explanation.

WHITE-LORED GNATCATCHER *Polioptila albiloris*

Listed without explanation by Sargeant (1995). As he did not list the common Blue-gray Gnatcatcher *Polioptila caerulea*, it can only be assumed that he inadvertently listed the wrong species.

BROWN-BACKED SOLITAIRE *Myadestes occidentalis*

Listed in Wood *et al.* (1986) as "very rare", and by Garcia *et al.* (1994) as "accidental." It was also listed by Miller & Miller (1994), Sargeant (1995), and Stotz *et al.* (1996). Wood & Leberman (1987) cited a record for 21 June 1985 in the Chiquibul region of southern Cayo District, which they described only as having an "eye-ring and contrasting back and nape color." They also stated that it "has been observed on a very few occasions near the western border of the country (Weyer, personal communication)". Howell & Webb (1995) stated that "a report from Belize...requires verification." Clement (2000), on the other hand, mis-stated Howell & Webb: "Has apparently wandered to Belize, but Howell & Webb (1995) questioned whether the record might refer to an escaped bird." I have been unable to find any additional supporting information for the Chiquibul bird or any other reported occurrence in Belize.

ORANGE-BILLED NIGHTINGALE-THRUSH *Catharus aurantiirostris*

A bird believed to be this species was briefly described by Kamstra (1995) from the Lamanai Archaeological Reserve, Orange Walk District, on 10 February 1995. His description:

> "…observed closely for about 10 minutes at 7 am…perched in a tall tree in full sunlight, about 8 metres above the ground. It was calling and occasionally shifted its position within the tree. The bird had a thrush-like body form with relatively long tail. The back was dull olive-grey while the undersides were uniform pale grey. It had a distinctive bright orange bill. I did not notice the leg colour."

This species is subject to some degree of vagrancy (one recently in southern Texas) and is, therefore, not entirely unlikely; however, the observer's description is at odds with a nightingale-thrush's typical haunts. The Orange-billed Nightingale-thrush is a bird of shaded forest understory and would be most unlikely 8 metres high in a tree in full sunlight. But for the bright orange bill (a yellow bill could be perceived as orange in bright sunlight), the description is consistent with that of a White-throated Robin *Turdus assimilis*, a species that is occasionally seen at Lamanai (England 2000).

GOLDEN-CHEEKED WARBLER *Dendroica chrysoparia*
Wood *et al.* (1986) included this species without explanation as a very rare transient in the Mountain Pine Ridge, and Garcia *et al.* (1994) listed it as accidental in the Mountain Pine Ridge. It was also listed by Miller & Miller (1994), but not in their 1998 checklist or their revised 2000 checklist. Howell & Webb (1995) stated that "a report from Belize...requires verification." This rare species winters locally at higher elevations (typically above 1,500 m) in Guatemala and southern Mexico (Braun *et al.* 1986; Howell & Webb 1995), and could perhaps occur as a stray in the Mountain Pine Ridge (maximum elevation 1,020 m).

PINE WARBLER *Dendroica pinus*
Wood *et al.* (1986) and Garcia *et al.* (1994) included this species as very rare in the Mountain Pine Ridge. Miller & Miller (1994, 1998b, 2000), Sargeant (1995), and Stotz *et al.* (1996) also listed it. Ashton (Anon. 1984) listed this species, along with two others new to Belize (see Great Black-backed Gull and Ruby-crowned Kinglet accounts, above) in an account of the incredible fall migration at Caye Bokel on 24-25 October 1983. Howell & Webb (1995), however, rejected all claims from Belize as unsupported. This species is unlikely to occur on geographic grounds, as it is very rare even as far south as extreme northern Mexico (Howell & Webb 1995; Rodewald *et al.* 1999). *D. pinus* can present an especially difficult identification challenge, as it is routinely confused with several other members of the Parulidae.

CONNECTICUT WARBLER *Oporornis agilis*
Included by Russell (1964), and subsequently on all published checklists for the country, based on an observation by J. Verner:

> "On 7 May 1958, Verner observed a typical male Connecticut Warbler under ideal conditions on Half Moon Caye. Verner spent over an hour in an unsuccessful attempt to collect the bird; at times the bird was so close to him that he was unwilling to shoot it for fear that he might destroy the specimen. On several occasions he was able to see the grey hood and the very distinct, complete eye-ring. Verner had collected *Oporornis philadelphia* the day before and saw another while trying to collect the Connecticut Warbler. He was quite aware of the rarity of this species."

I consider this sight record by a single observer tenuous for the following reasons: (1) it would represent the only record of this species for all of Mexico and northern Central America (Howell & Webb 1995); (2) there is no mention in Russell's account of this species' characteristic walking gait which easily separates it from the other *Oporornis*; (3) the fact that female *philadelphia* can have a complete white eye-ring and nearly all grey hood in alternate plumage (thus resembling *agilis*) was virtually unrecognized before the 1970s; and (4), a specimen collected by Verner on Little Water Caye one week later (14 May 1958), which he identified as *agilis*, was instead a female *philadelphia* (LSU specimen no. 22439).

RED-HEADED TANAGER *Piranga erythrocephala*
Wood *et al.* (1986) included this species on the basis of one record; however, the source and details of that record are unknown to me. Miller & Miller (1994) and Sargeant (1995) also included this species in their lists. *P. erythrocephala* is a west Mexican endemic that is most unlikely to occur anywhere near Belize; therefore, it is not surprising that Howell & Webb (1995) rejected it as not credible. This species may have been confused in the past with moulting male Summer Tanager *Piranga rubra*, which often have red confined almost entirely to the head. Earlier field guides did not illustrate this plumage of *P. rubra*.

RUFOUS-WINGED TANAGER *Tangara lavinia*
Wood *et al.* (1986) listed this species as rare in southern hardwood forests, and Peterson & Chalif (1973) stated: "Reported B. Honduras." Miller & Miller (1994), Sargeant (1995), and Stotz *et al.* (1996) also listed it for Belize. This species is a resident of southern Central America occurring north only to eastern Honduras (AOU 1998), and it is unlikely to occur in Belize on geographical grounds. The Belize records were rejected by Howell & Webb (1995, p. 770) as "not credible", and a record from Guatemala was a mislabeled Golden-hooded Tanager *Tangara larvata* (Jenkinson & Mengel 1979).

LARK BUNTING *Calamospiza melanocorys*
Included as very rare in northern hardwood forest by Wood *et al.* (1986). Garcia *et al.* (1994), Miller & Miller (1994), and Stotz *et al.* (1996) also listed it for Belize. Peterson & Chalif (1973) stated: "Accidental B. Honduras." The basis for the inclusion of this species in these publications is unknown to me. It is found in winter south only to north-central Mexico. Extreme caution is needed in identifying all out-of-range birds, no matter how striking they may be, and especially birds whose identification is based largely on the presence of white wing patches. For example, partially albinistic or leucistic sparrows and finches with white patches in their wings are frequently reported as *C. melanocorys* in the United States (personal experience).

GRASSLAND SPARROW *Ammodramus humeralis*
This South American species was included in error by Sargeant (1995), apparently in place of its congener the Grasshopper Sparrow *Ammodramus savannarum*, which is locally common in pine savannas in Belize.

SONG SPARROW *Melospiza melodia*
Included without explanation by Miller & Miller (1994).

LAZULI BUNTING *Passerina amoena*
According to Miller & Miller (1998a), "One record exists from a reliable observer along the Macal River, Chiquibul National Park, where several individuals were seen during a four-day period in 1993 (Tzib pers. comm.)." My attempts to learn

more about this improbable record (e.g., time of year, number of birds, sex, how identified, etc.) have not been successful. Unless more information is forthcoming, this record should be disregarded as hearsay.

AUDUBON'S ORIOLE *Icterus graduacauda*
Included by Garcia *et al*. (1994) and Miller & Miller (1994, 1998b, 2000). Edwards (1998) included it as accidental with a question mark. Miller & Miller (1998a) stated "…records exist for Gallon Jug and Rio Bravo, as well as Lamanai (Noble *et al.* pers. comm.) and the Bladen (Brokaw & Lloyd-Evans 1987). Robbins (pers. comm.) recorded two individuals in the Toledo District in January 1989." This species is widely reported in Belize despite the fact that it is sedentary and found no closer to Belize than central Veracruz on the Atlantic Slope and Oaxaca on the Pacific Slope, each 800 km to the west. I suspect that most or all of these reports are based on misidentified Black-cowled Orioles *Icterus prosthemelas*. The extent of plumage variation in female and juvenile *prosthemelas* is greatly under-appreciated. For example, many *prosthemelas* (immature males and adult females) have a nearly complete black hood, and some of these in turn have no black in the back (personal observations). Howell & Webb (1995, Plate 66) illustrated some of these plumage variations.

Conclusion

Forty-five species for which confirmation appears to be lacking, are reviewed in this paper. Some have undoubtedly occurred and only lack proper documentation; others (primarily migratory species) have the potential to occur but fall short of having the minimum required documentation, and still others (mostly sedentary or near-sedentary species) are highly improbable and are, no doubt, based on misidentifications. My placement of these species in the above categories (Table 1) is, of course, somewhat arbitrary, and to some degree reflects my consideration about their likelihood of occurrence. Until we learn more about patterns of dispersal, especially in the nocturnal, hard to identify, and easily overlooked species (*e.g.*, owls, nightjars, and swifts), the assignment of birds to these various lists is tenuous. For example, I would never have predicted Flame-colored Tanager *Piranga bidentata* to have a resident population in Belize (Jones *et al*. 2000) before receiving a report from a highly competent observer and subsequently seeing it myself. Other mid-elevation species from the mountains of nearby Guatemala may yet prove to have small populations on one or more of the higher, unexplored peaks in Belize, but their presence remains undocumented.

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A newly discovered specimen of Kalinowski's Tinamou *Nothoprocta kalinowskii* from the Andean Pacific slope of Peru

by Marcelo Ferreira de Vasconcelos

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Kalinowski's Tinamou *Nothoprocta kalinowskii* is a threatened species endemic to Peru, known only from two ancient specimens (BirdLife International 2000) and a recent sight record. The first specimen was collected in 1894 at Licamachay, south of Cuzco town, Cuzco (elevation 4,575 m) and the second from Tulpo, on the Andean Pacific slope, south-east of Huamachuco, La Libertad (*c.* 3,000 m) (Blake 1977, Fjeldså & Krabbe 1990, Collar *et al.* 1994, Stattersfield *et al.* 1998, BirdLife International 2000). In May 2000, G. Engblom saw a Kalinowski's Tinamou and collected a feather from near Tulpo (*per* J. Fjeldså, pers. comm.). The aim of this paper is to report a newly discovered specimen of this rare bird from the Andean Pacific slope of Peru.

When examining some bird specimens from Peru, deposited in the 'Coleção Ornitológica do Departamento de Zoologia da Universidade Federal de Minas Gerais' (DZUFMG) in Belo Horizonte, Minas Gerais, Brazil, I found one tinamou identified as Ornate Tinamou *Nothoprocta ornata*. I checked this specimen with the plate and description in Fjeldså & Krabbe (1990) and concluded it was a Kalinowski's Tinamou *Nothoprocta kalinowskii*, since its wing-coverts are very densely barred, and secondaries and tertials barred with rufous-brown (Fig. 1). The neck is not uniform drab-gray, as described for *N. ornata* (Fjeldså & Krabbe 1990), but it is whitish, speckled with dark-brown. This specimen cannot be the Curve-billed Tinamou *Nothoprocta curvirostris*, another species with rufous colouration in the secondaries, because of its spotted (rather than striped) face, the grey breast, finely mottled pinkish grey underparts, and distinctly shorter bill (also in comparison with *N. ornata*) (Blake 1977, Fjeldså & Krabbe 1990).

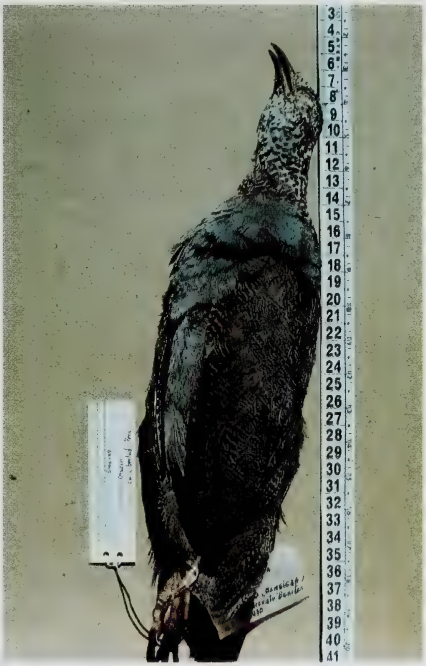

Figure 1. Kalinowski's Tinamou *Nothoprocta kalinowskii* specimen (DZUFMG 3014) from Otuzco, La Libertad, Peru. Photo: M. F. Vasconcelos.

This male bird (DZUFMG 3014) was collected by Ismael Arévalo Benites on 10 December 1970 at Sinsicap, Otuzco, La Libertad. Unfortunately, there is no information about the habitat at the collecting site on the specimen's label. The measurements (mm) taken were: wing (flat) 187.0, tarsus 31.3, culmen (to skull) 26.6.

Otuzco (07°50'S, 78°30'W) is *c*. 60 km from Huamachuco (07°50'S, 78°05'W), close to the locality where the second *N. kalinowskii* specimen was collected.

Since the species had not been found since 1900 there were suspicions that it was extinct (Collar *et al.* 1994, BirdLife International 2000), but this specimen and the recent sighting by G. Engblom show that *N. kalinowskii* lived in the Otuzco region at least till 1970, and still survives near Tulpo. To ascertain its current status and distribution more precisely, searches for *N. kalinowskii* should be undertaken on the Pacific slope of La Libertad, and also in Cordillera Vilcabamba and adjacent Apurímac, where remnant populations of this rare species may still exist.

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Relationship of the Red-thighed Sparrowhawk *Accipiter erythropus* and the African Little Sparrowhawk *A. minullus*

by Michel Louette

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The taxonomy of the two smallest and parapatric African *Accipiters* is in dispute; some authors consider them as belonging to a single species (Wattel 1973, Snow 1978), others as separate species (Brown *et al.* 1982, del Hoyo *et al.* 1994). In the forest-dwelling Red-thighed Sparrowhawk *Accipiter erythropus*, two subspecies are recognised by Brown *et al.* (1982): the smaller nominate race in forested Upper Guinea, the larger *A. e. zenkeri* in forested Lower Guinea. In the African Little Sparrowhawk *A. minullus*, living in woodland from Ethiopia to the Cape, several races were described but none is nowadays recognised. In measurements, these two sparrowhawks are very similar, although *A. e. zenkeri* is *c.* 5% larger in wing-length than *A. minullus* (Wattel 1973, Prigogine 1980, Kemp & Crowe 1994, Kemp & Kemp 1998), which in turn is therefore about the same size as *A. e. erythropus* (Brown *et al.* 1982). They share an unique pattern of a white rump and broken white upper tail-bars. They differ in adult plumage colour: the Red-thighed Sparrowhawk is darker above than the African Little Sparrowhawk, is indistinctly barred or unbarred ventrally and has unbarred rufous flank and thigh feathers, whereas the African Little Sparrowhawk is distinctly barred ventrally with paler flanks. The eye is reddish in the Red-thighed Sparrowhawk and normally yellow in the African Little Sparrowhawk (Allan 1997, but see Liversidge 1962 for occasional red eye colour).

Other authors, including Dowsett & Dowsett –Lemaire (1993) advocated that, before deciding on their specific status, more evidence was required. I present here four points, based on (old) material in collections.

Specimen information

1) Prigogine (1980) studied the specimens present in the Royal Museum for Central Africa (RMCA). He claimed that the taxa 'ne sont pas en contact dans l'est du Zaïre' (suggesting that they are, elsewhere) and produced a map with localities in Zaïre (now Democratic Republic of Congo - DRC) and adjoining countries. The map contains one dot for *A. minullus* in western DRC, also present in Snow's (1978) atlas. This locality is Gungu (according to the 'Gazetteer and Maps of African bird localities', prepared by B.P. Hall for the atlas publications) at 05°44'S, 19°19'E. The presence of *A. minullus* at Gungu was indeed mentioned by Schouteden (1965). This, unfortunately, is in error: in fact H. Wille collected two specimens of Shikra *A. badius* (RMCA 101059 and 111290, already correctly identified in 1964) there. It is surprising that A. Prigogine, who had ample access to the RMCA collection, did not look up these specimens. Two more localities for *A. erythropus* from DRC became known after the publication of Prigogine's map: Ngongo at 04°24'S, 17°42'E and Kibu at 03°21'S, 28°33'E. I confirm that there are no specimens of *A. minullus* from western DRC, which seems to be occupied completely by *A. erythropus*, apparently occurring also in the well-wooded regions outside evergreen forest.

2) *A. erythropus* is traditionally mentioned from a single locality in Angola: 'Quibula, interior of Benguella' of Barboza du Bocage (1892a, 1892b), said to be by Rosa Pinto (1983) 'near Massano de Amorim, Huambo province'. It is indicated on Snow's and Prigogine's maps. This isolated far southern occurrence was repeated in Traylor (1960, 1963), Rosa Pinto (1983) and Dean (2000). The specimen (female according to Barboza du Bocage 1892a, Traylor 1960 and Rosa Pinto but male according to Barboza du Bocage 1892b) was collected by Anchieta and said to have been sent to the Museum in Lisbon. It is no longer available (the Lisbon collection was destroyed by fire in 1978), but it is uncertain if it was ever deposited there (some Barboza du Bocage specimens were donated to other museums). Traylor and Rosa Pinto were unable to examine it. Barboza du Bocage's identification of this singleton (as *A. hartlaubi*, a synonym of *A. erythropus*) was made in comparison with a plate in Sharpe (Pl. V, published in 1876, according to Traylor 1960, but in fact Pl. VI, published in 1874) where an adult Red-thighed Sparrowhawk is depicted. Traylor (1960) says 'that the picture is perfectly clear' (with which I agree) and 'it would not be possible to confuse with a specimen of *minullus*' (which I doubt). In his 1892a paper, Barboza du Bocage gives the colour of the unfeathered parts, as noted by Anchieta: 'iris colour of red minium, cere and eye rim pale yellow, legs virgin wax colour' (my translation). This combination of colours does not correspond well with an adult Red-thighed Sparrowhawk (which has orange cere and legs). I have

serious doubts that *A. erythropus* was really involved, or that it is present in this part of Angola. Whereas *A. minullus* is widespread in Angola (Dean 2000), the sympatry of the two taxa in this country is unproven.

3) The RMCA has three specimens of *A. minullus* taken in Baraka at 04°06'S, 29°06'E, Kivu, on Lake Tanganyika, DRC by Cdt Pauwels, in or before 1910. In the register the eye colour for all three is given as 'red'. Careful re-examination of the two adult males and the one adult female reveals the following:

Male RMCA 1500 was compared with 10 adult male *A. minullus* from Kenya, Rwanda and southern DRC and 25 adult male *A. e. zenkeri* from DRC. It is decidedly an intermediate. Diagnosis: dorsal colour darker than *A. minullus*, not quite so dark as *A. erythropus*. Ear coverts grey, not black as in *A. erythropus*. Ventral side within the variation for *A. erythropus*, not *A. minullus*: weak barring, uniform red flank feathers; thighs to the contrary barred grey on white as in *A. minullus*, not rufous or rufous and unbarred grey as in *A. erythropus*.

Male RMCA 1499 is somewhat stained on ear-coverts and breast. I consider it to resemble *A. minullus*, but it has deep rusty flanks, compared to the other adult *A. minullus* males in RMCA. It could be an intermediate with mostly *A. minullus* characteristics.

Female RMCA 1498 was compared with nine adult female *A. minullus* from Kenya, Ethiopia, Rwanda and DRC and with nine adult female *A. erythropus* from DRC, and seems to fall within the normal variation for *A. minullus*.

Two adult male birds from southern Rwanda also deserve mentioning (RMCA 69605 from Mayaga at 02°15'S, 29°35'E and RMCA 88559 from rivière Akanyaru at *c.* 2°24'-48'S, 29°35'S–30°00'E). Their dorsal side and head is very dark, darker than all other *A. minullus* available in the RMCA collection; ventrally they match *A. minullus*.

Wing lengths of the males cited above (in mm): 1500: 147; 1499: 147; 69605 in moult; 88559: 145.These measurements are within the range for both taxa, as given in Prigogine (1980): *A. e. zenkeri* 145-157 mm; *A. minullus*: 137-147 mm (including the birds singled out here).

It is conceivable that some hybridisation takes place in the DRC- Rwanda border region, which is a potential contact zone between the taxa (*contra* Prigogine 1980).

4) Differences in juvenile plumage are raised as an important point by those authors advocating specific separation of the two taxa. Differences do exist but there is also variation within each taxon (Chapin 1932, Kemp & Kemp 1998). I examined 14 *A. minullus* specimens from Burundi, Kenya, Rwanda and DRC (including AMNH 262190, collected by Chapin (1932) at Kisenyi at 01°42'S, 29°15'E, not on Prigogine's map), two *A. e. erythropus* from Togo and six *A. e. zenkeri* from DRC. Stresemann (1926) described two juvenile birds from Beni at 0°28'N, 29°28'E as *A. minullus sassii.* I have seen pictures of both, they seem to be typical *A. e. zenkeri.* In general, *A. erythropus* is darker dorsally than *A. minullus*; ventrally*: A. erythropus* is saturated

with rusty on the thighs and on the flanks, which are also heavily barred. The two *A. erythropus* races differ apparently in that the central part of the belly is sparsely marked in *A. e. zenkeri*, which is weakly streaked or spotted, but in the nominate race, the ventral side is heavily barred rufous. The ventral side of *A. minullus* is variable, but in most specimens heavily streaked or spotted, including the central parts of the belly and breast. In fact, the differences between *A. erythropus* and *A. minullus* are those one would expect between such differently coloured birds as adults. Indeed, immature plumage heralds the adult plumage (Louette 2000, 2001 for the African Goshawk *A. tachiro*) and this may explain the difference in dorsal hue. Differences in spotting on the ventral side in the juvenile are also present among the similarly distributed African Goshawk, which represents a similar but more complex case, demonstrating plumage variation according to habitat in this genus (Louette 2000, 2001).

Conclusion

The provisional distribution in the west of the potential contact zone, the occasional hybridisation in the east and the variation in the juvenile plumage lead me to consider the Red-thighed Sparrowhawk and the African Little Sparrowhawk as typical allospecies in a superspecies (Amadon & Short 1992). They may even prove to belong to a single biological species in the classical sense (see above for morphometry, suggesting a similar ecology and identical complex upper tail pattern). They are likely to have evolved for some time in separate regions and possess a plumage hue according to the general habitat there (forest and woodland). In more recent times, their distribution ranges approached, with localised (occasional or regular?) hybridisation (even by 1910, before massive deforestation). The range of the African Little Sparrowhawk is peculiar: it is nowadays still absent from west Africa, which is surprising, because the habitat seems adequate; its region of origin must have been to the south or east of that of the Red-thighed Sparrowhawk.

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Hippolais warblers apparently breeding on the north Somalia coast

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In May 1979 JSA and J.E.Miskell found two intriguing species of warblers in trees near the north-west Somalia coast. One was an *Acrocephalus* with a wing formula like that of the African Reed Warbler *A. baeticatus*, the other a small *Hippolais*. In the following May, these observers found the same two species in north and north-east Somalia, singing in coastal mangroves. Examination of specimens of the *Acrocephalus* warbler, together with similar birds collected from the Red Sea coasts of Eritrea, Sudan and Arabia, resulted in the naming of a new taxon, *A.[baeticatus] avicenniae* (Ash *et al.* 1989), soon shown to be widely present in the Red Sea and Gulf of Aden mangroves. The *Hippolais* warblers were also thought to be a locally breeding form, for examples collected all had enlarged gonads. They were treated by Ash & Miskell (1998) under Olivaceous Warbler *H. pallida*, but further study and comparisons were required.

We have recently re-examined the 1979-80 specimens and compared them carefully with other small brown or greyish-brown *Hippolais* forms. We have investigated reports of similar warblers elsewhere on the southern Red Sea and north Somalia coasts, and have located a specimen from Eritrea which appears to be the same as the Somalia mangrove birds.

Observations in Somalia 1979-1980

In 1979, *Hippolais* warblers were first found singing on 8 May in the tops of *Tamarix* trees in a dry wadi 6 km north-east of Giriyaad (10°51'N, 43°16'E), within 30 km of the sea. One bird was netted and collected. From 9-12 May, several more were singing in tall *Acacia, Tamarix* and *Conocarpus* trees in irrigated gardens at Takoshe (11°21'N, 43°25'E), near Zeila.

In 1980, observations were made further east at Alula (11°58'N, 50°46'E) on 2-3 May. Many warblers were singing in mangroves round a coastal lagoon 1 km east of the town. The situation was confused by the presence of several migrants (Marsh Warbler *A. palustris* and Chiffchaff *Phylloscopus collybita* identified with certainty), but the bulk of the song came from two species, a pale brown *Acrocephalus*, later to be described as the Mangrove Reed Warbler *A. (baeticatus) avicenniae* and a somewhat greyer *Hippolais*. The *Hippolais* had a tinge of brownness above and were pale below, with long pale supercilia, sagittate bills and no trace of pale wing panels; they lacked the tail or wing-flicking typical of *H. pallida elaeica* or Upcher's Warbler *H. languida*. They sang rather like *elaeica* but with frequent paired notes reminiscent of *A. scirpaceus*. On 6 May, nets erected in the mangroves at dawn quickly caught six birds, consisting of one *A. palustris*, two *A. [b.] avicenniae* and three of the unidentified *Hippolais.* These last were collected and their gonads were found to be much enlarged. They were in worn plumage like the *avicenniae* and were very similar in size and wing-length, but were greyer, with broader bills, yellower (less orange) mouths, browner (less greyish) legs without yellow on the soles, squarer tails and shorter undertail-coverts. Their wing structure was similar to that of the *avicenniae* although the first primary was much longer (Table 1). They were certainly not *H. p. elaeica*, a form which overwinters commonly in north-east Africa. Indeed, in wing length and wing formula they showed a much closer resemblance to Sykes's Warbler *H. rama*.

A few days later, on 8 May, three more warblers were found in intense early afternoon heat in a small patch of degraded mangroves at the mouth of the Garas Wadi (11°15'N, 40°02'E), 17 km west of Bosaso. These were again greyish birds with pale brown legs, no wing- or tail-flicking and no wing panel. They had the same *Hippolais*-type song as the Alula birds and were presumed to be of the same form.

The four *Hippolais* specimens from 1979-80 are now housed in the Smithsonian Institution collection, Washington, DC, USA (Reg. Nos. 571271, 571272, 571275, 571365).

Other reports and specimens from the Red Sea, Somalia and north-east Arabia

The following *Hippolais* are probably all of the same form as the birds in the Somalia mangroves: a) four January to April specimens from the Eritrean coast listed as *rama* by Zedlitz (1910-1911) on page 71, but which he later (pages 611-612) decided were *H. pallida*; b) a fresh-plumaged bird collected by K. D. Smith while singing in mangroves at Arafale (15°05'N, 39°45'E), Eritrea, on 5 November 1951, labelled as *H. pallida elaeica* and examined by us in the Tring collection (Reg. No. 1952.4.7); c) a moulting bird netted in mangroves, examined in detail and released at Ras Siyan (12°29'N, 43°19'E), Djibouti, on 18 October 1985 (Welch & Welch 1986).

We have examined a specimen from the AMNH collection (Reg. No. 595191) taken on 20 February 1919 at Berbera (10°26'N, 45°00' E), north Somalia, by G. F. Archer, which was initially labelled *H. pallida* but then re-identified by Meinertzhagen as *rama* (Archer & Godman 1961). This may well be *H. p. elaeica*, but some wing formula details are unusual (see Table 1). We have also examined two worn *Hippolais* in the Tring collection from coastal sites in the United Arab Emirates: a) a bird collected at Khor Khalba (25°01'N, 56°22'E) in Sharjah on 24 March 1971 by M.D.Gallagher, and identified as *H.(caligata) rama* (Reg. No. 1977.18.27); b) a male with enlarged testes, collected by Gallagher while singing in mangroves at Ras al Khaimah (*c.* 25°57'N, 56°03'E) on 16 June 1972, and labelled *H. pallida elaeica* (Reg. No. 1972.6.5*)*. We consider that both of these belong to *H. rama* (see below and Table 1), and they resemble the Somalia specimens very closely.

Details and Comparisons of Specimens

Measurements and wing formula details of the four Somalia specimens are given in Table 1. We have compared them carefully at Tring (see Table 2) with five small *Hippolais* forms: *H. pallida elaeica* of SE Europe and SW Asia (which winters in NE and E Africa); *H. p. pallida* of Egypt (which migrates to the Sudan); *H. p. laeneni* of the southern Sahara; *H. rama* of central Asia (which winters from India to Arabia); and *H. caligata* of W Russia and N central Asia (which also winters in India).

The Somalia birds are all in worn, rather faded plumage. They are uniform dull greyish brown above, similar to *elaeica* in the same state of plumage, but slightly darker and less grey. They are darker (much less buffy or ochreous) than nominate *pallida* or *laeneni*. They match worn *rama* closely, but lack the olive tones of *caligata*. Pale fringes near the tips of the outer tail feathers have been practically lost, but feather wear is not so extreme as to seriously affect comparisons of measurements and wing formula with those of other taxa. In wing-length the Somalia birds fall below the range of *elaeica* and average less than *pallida,* but agree closely with the other three forms. They have a mean tail/wing ratio of 81 %, higher than in *elaeica* or *caligata* but somewhat lower than in *rama.* But note that tail measurement in these worn birds was probably reduced by 1-2 mm. Bill shape resembles that of *rama, elaeica, pallida* and *laeneni*, rather broad-based and with straight or marginally concave sides (differing from the more markedly concave-sided, finer-tipped bill of *caligata*). In length and width, bills agree most closely with *rama,* averaging slightly narrower than in *elaeica* and *pallida*, but larger than in *caligata.*

Wing structure is characterised by a short primary extension, with distances from 6th primary tip to wing tip and 10th primary tip to wing tip much less than in *elaeica*, and matching *rama* and *laeneni*. There are some subtle differences from *rama*

TABLE 1

Measurements and wing structure of *Hippolais* specimens from Somalia, Eritrea, Djibouti and the United Arab Emirates

Country	Somalia	Somalia	Somalia	Somalia	Eritrea	UAE	UAE	Djibouti	Somalia
Locality	Giriyaad	Alula	Alula	Alula	Arafale	Khor Khalba	Ras al Khaimah	Ras Sayan	Berbera
Date	8.v.79	5.v.80	5.v.80	5.v.80	5.xi.51	24.iii.71	16.vi.72	18.x.85	20.ii.19
Sex	F	M	F	M	?	M?	M	?	F
Wing	60	62	58	62	59	59	61	62	64
Tail	47	50	49	50	49	52	52	-	51
Bill length *	15	16	15	15.5	16	14.5	15.5	15	16
Bill width**	3.8	3.8	4.0	4.2	4.2	4.0	4.2	3.5	4.2
Tarsus	20	21	20.5	20	20	21.5	21	-	20
Longest p.	3-4	3-4	3-4	3-4	3-5	3-4	3-4	3-4	3-4
p2 = p?	6/7	7	7	6/7	7	8/9	7/8	7	7/8
p2 < wing tip	4.5	5.5	5	6	4.5	6.5	5.5	5	7
p6 < wing tip	3.5	3.5	3	4	2.5	1.5	2	3	4
p10< wing tip	9	11	9	11	9	9	9.5	-	10.5
ss < wing tip	9.5	12	10	11	-	-	-	-	-
p1 > pc	7	6	4.5	5.5	7	6.5	8	8	2
p2 > p1	25	28	26.5	27.5	25	24	24	-	30
Emarginated pp	3-5	3-5	3-5	3-5	3-5	3-6	3-6	3-5	3-5
Gonads (mm)	1,5	7 x 6	5 x 5	7 x 6.5			large		
Weight (g)	9.3	10.4	10.5	9.9				9.1	
Museum	USNM	USNM	USNM	USNM	Tring	Tring	Tring	-	AMNH
Reg. No.	571275	571272	571365	571271	1952.4.7	1977.18.27	1972.6.5	-	595191
Collected by	JSA/JEM	JSA/JEM	JSA/JEM	JSA/JEM	Smith	Gallagher	Gallagher	Denton	Archer

TABLE 2

Measurements (mm) and wing formula details of the mangrove *Hippolais* of N Somalia compared with those of various small *Hippolais* forms. Measurements are given for the number of birds indicated, as (mean) range or range only. Equal numbers of MM and FF were included in comparison samples.

	N Somalia coast birds	*elaeica*	*pallida*	*laeneni*	*caligata*	*rama*	UAE coast birds
Number measured	4	10	10	12	10	20	2
Wing	(60.5) 58-62	(65.5) 62-69	(63.0) 60-66	(61.8)59-65	(60.2)58-64	(60.7)57-64	59, 61
Tail	(49.0)47-50	(51.3)48-56	(49.5)48-52	(50.4)47-53	(47.5)45-50	(52.2)47-56	52, 52
Mean tail/wing ratio (%)	(81.0)	(78.3)	(78.6)	(81.6)	(78.9)	(86.0)	(85.8)
Tarsus	(20.4)20-21	(21.2)20-22.5	(21.2)20.5-22.5	(20.5)19.5-21.5	(19.7)19-20.5)	(20.4)20-21	21, 21.5
Bill length	(15.4)15-16	(15.7)15-17	(15.6)15-16.5	(15.0)*14.5-15.5	(13.3)12.5-14	(14.8)14-15.5	14.5, 15.5
Bill width	(3.9)3.8-4.2	(4.4)4.2-4.8	(4.4)4.0-5.0	(4.3)**4.2-4.6	(3.7)3.4-4.0	(4.0)3.6-4.2	4.0, 4.2
p2 = p?	6/7-7	5/6-7	6/7-7/8	6/7-8	6-7/8	6/7-8/9	7/8, 8/9
p2 < wing tip	4.5-6	3-6	3.5-6.5	4-7.5	4-6	4.5-8	5.5, 6.5
p6 < wing tip	3-4	2.5-4.5	1.5-3.5	1.5-3	1-2.5	1-2.5	1.5, 2
p10 < wing tip	9-11	11-14.5	9.5-12	9.5-12	9.5-11	8-10.5	9, 9.5
p1 > pc	4.5-7	3-6.5	5-8.5	4.5-8	3-8	4.5-8	6.5, 8
Number with p6 emarginated	0/4	1/10	4/10	4/12	5/10	16/20	2/2

*n = 10, ** n = 9

In order to achieve a degree of standardisation all measurements were taken or retaken by DJP at the Natural History Museum, Tring.

however: the second primary is equal to or longer than the 7th (in *rama* it is usually shorter) and there is no distinct emargination on the 6th primary (a feature of most *rama*). In wing structure detail, the Somali birds in fact agree more precisely with *laeneni* than with *rama*.

Also given in Table 1 are details of the specimens from the Red Sea and eastern Arabia, and of Archer's Berbera bird. The November bird from Eritrean mangroves is in fresh plumage. It is certainly not *elaeica* and has a much shorter wing. Like *rama* it has brownish-white fringes around the distal part of the outermost tail feathers which merge with the darker centres (less well demarcated than the whitish edges at the tips of the outer tail feathers of *elaeica),* and has narrower and less conspicuous pale fringes to the outer edges and tips of the secondaries and tertials than fresh-plumaged *elaeica, pallida* or *laeneni*. But it seems to be a little greyer than freshly moulted *rama* from India, and its wing formula details (2nd primary equal to the 7th, and 6th without emargination) would place it with the Somalia birds rather than as a wintering migrant *rama* from Asia. It should be noted that Smith (1957) reported *Hippolais* warblers (which he assumed to be *elaeica)* as possibly resident and singing commonly in Eritrean mangroves in mid-May, and Laurent (1990) refers to *H. pallida* as being "very common and breeding in March-April" in Djibouti. The bird caught in October in Djibouti mangroves was moulting, with the inner six primaries and some of the tail feathers new. Its measurements and wing formula match those of the Somalia and Eritrea specimens.

Archer's Berbera bird is not badly worn, but has feathers broken or missing in both wings, and one half of the tail missing. Sexed female, its wing length of 64 mm and its other measurements would place it as *elaeica*, which it matches well in plumage colour. However, it has an unusually short second primary (between 7th and 8th) and a short 10th primary shortfall (10.5 mm) which fit better with the measurements of the mangrove birds. It is difficult to place this bird with certainty. The two worn Tring specimens from the United Arab Emirates match *rama* in tail length (tail/wing ratio 86%) and wing formula (2nd primary shorter than 7th, 6th primary emarginated). They can confidently be assigned to this form, which is recorded as an uncommon local migrant and possible breeder in mangroves on the Batinah coast (Cramp 1993, Eriksen & Sargeant 2000). Note however that but for the small wing formula difference and their slightly longer tails these individuals could have been considered identical to the Somalia mangrove series.

Conclusions

To judge from their territorial behaviour and their enlarged gonads, the *Hippolais* present during May in the north Somalia mangroves represent a local breeding form, with which we would associate the specimens from Eritrea and Djibouti. It is still uncertain whether these birds belong under *H. pallida* or *H. rama,* and further work is required on their song and behaviour. They are quite distinct from the larger, longer-winged *H. pallida elaeica,* and the much more buff and also longer-winged *H. p. pallida*. Although they match *H. p. laeneni* in size and structure they are quite different in colour. Their resemblance to *H. rama* is striking, and they differ only in minor details of wing formula and in their slightly shorter tails. A resident north-east African population of *rama* would be expected to be shorter-winged with a shorter second primary and a higher tail/wing ratio than migrant birds breeding in Asia. In the Red Sea/ Somalia birds, however, the second primary is longer than in Asian *rama* and the tail/wing ratio appears to be slightly lower.

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More on Boyd Alexander's types from Lake Chad

by R. J. Dowsett

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Boyd Alexander collected eleven new avian taxa when he visited Lake Chad in 1904-05. Dowsett & Moore (1997) clarified the type localities of two of these (Lesser Swamp Warbler *Acrocephalus gracilirostris neglectus* and Greater Swamp Warbler *A. rufescens chadensis*). It is useful now to examine the remaining nine. Coordinates are given for localities not in the gazetteer of Elgood *et al.* (1994).

The following three races were described simply from "Lake Chad", with no other locality indicated:

Caprimulgus natalensis chadensis Alexander 1908 *Bull. Brit. Orn. Cl.* 21: 90. Natal Nightjar.
No date was given originally, but the type was collected 30 April 1905 — date on label per Warren (1966), where the locality is given as Kowa Baga (13°07'N,13°52'E), thus in Nigeria.

Erythropygia galactotes oliviae (Alexander 1908 *Bull. Brit. Orn. Cl.* 23: 15). Rufous Bush Chat.
Collected 21 November 1904, and Warren & Harrison (1971) give locality on label as near Yo, thus in Nigeria.

Bradypterus baboecala chadensis Bannerman 1936 *Bull. Brit. Orn. Cl.* 57: 43. Little Rush Warbler.
Collected 1 December 1904 (though "Nov" on label per Warren & Harrison 1971), thus in any case at the same time generally as *Acrocephalus gracilirostris neglectus* (Alexander 1908) and *Batis orientalis chadensis* (see below). At that time Alexander was working the Nigerian shore, as shown by Dowsett & Moore (1997). Mrs A. Moore informs me (*in litt.*) that Alexander's notebooks (in the Natural History Museum, Tring) list birds collected at "Kopichi near Kuka" [i.e. Kukawa, 12°55'N,13°34'E] on 30 November and also "*Quelea* .... Mongono 28.11.904"; although his map (Alexander 1907) shows Mongono on the Chad side of the lake (13°19'N,14°04'E), at the end of November he would would more likely have been at the Monguno in Nigeria at 12°41'N, 13°36'E (on most maps), just south of Kukawa.

The type locality of *B. baboecala chadensis* can thus be considered "Lake Chad (Nigeria)". Elgood *et al.* (1994) knew of "no positive record" from the Nigerian side of the lake. The species has recently been rediscovered there (Ulf Ottosson *et al.* unpublished).

Traylor (in Mayr & Cottrell 1986) has recognized this race, but as all anyone has had for examination is the single (immature, damaged) holotype, the best treatment remains that of Mackworth-Praed & Grant (1941), who treated it as a synonym (of *B. b. elgonensis*). The taxonomic status of other populations in northern Nigeria (Elgood *et al.* 1994) remains equally uncertain.

For the remaining six races full details of locality were in the original description, and all are on the Nigerian side of Lake Chad:

Mirafra cantillans chadensis Alexander 1908 *Bull. Brit. Orn. Cl.* 21: 89. Singing Bush Lark.
Kowa Baga, Lake Chad. Coll. 19 April 1905 (date on label per Warren & Harrison 1971).

Riparia paludicola sudanensis (Alexander 1908 *Bull. Brit. Orn. Cl.* 21: 88). African Sand Martin.
Bulturi, Lake Chad (13°28'N,12°56'E). Coll. 12 January 1905. Bulturi is in fact on the Yobe river, some distance from the lake.

Batis orientalis chadensis Alexander 1908 *Bull. Brit. Orn. Cl.* 21: 105. Grey-headed Batis.
Arrigi (Arege), Lake Chad. Coll. 30 November 1904 (in original description male type 30.x. and female 30.xi.).

Tchagra senegala chadensis Bannerman 1922 *Rev. Zool. afr.* 9: 355. Black-crowned Tchagra.
Yo, Lake Chad. Coll. 5 January 1905.

Vidua chalybeata neumanni (Alexander 1908 *Bull. Brit. Orn. Cl.* 23: 33). Village Indigobird.
Yo, Lake Chad. Coll. 19 November 1904.

Amadina fasciata sudanensis Alexander 1907 *Bull. Brit. Orn. Cl.* 19: 104. Cut-throat Finch.
Two types were designated in the original description, near Kukawa ("22 Nov. 1905" *sic*) & Marfoni (Maifoni, near Maiduguri) (28 January 1905). "Kuka" [i.e. Kukawa] was taken as the type locality by Sclater (1930). Note that Warren & Harrison (1971) gave the date on the label as 24 November 1904 (and indeed, on 22 November 1905 Alexander was far away, in the Oubangui region).

Note that it was through a slip of the pen that Warren & Harrison (1971) gave as "Pettia, Lake Chad" the type locality of the Mocking Chat *Myrmecocichla cinnamomeiventris claudi* (Alexander 1906 *Bull. Brit. Orn. Cl.* 16: 124). Pettia (10°09'N, 09°06'E) is in central Nigeria, and Alexander collected the type on 25 August 1904, a date which accords with his travels through that region.

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Further records of range extension in the House Crow *Corvus splendens*

by Colin Ryall

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The House Crow *Corvus splendens* is indigenous to the Indian Subcontinent, southern Iran and Myanmar (Burma). Over the past century or so they have spread, by both deliberate introduction and ship-assisted passage, throughout much of the Indian Ocean rim including the Arabian Peninsula, eastern and southern Africa, some Indian Ocean islands and sites in southern Asia.

Range expansion continues and the aim of this paper is to update information given in Ryall (1994, 1995) using information from published records, correspondence from past reporters or responses to requests for information in international and national journals. Contributors' initials are given in brackets after information and names are given in full under Contributors.

Europe

Netherlands

The population of House Crows, initiated in Hoek van Holland in 1994 (Ryall 1995) has now increased through both successful breeding by the founder pair, starting in their first year (Anon 1994a), and by the arrival of additional birds.

In November 1994 a further, individual bird arrived in Renesse, *c.*30 km SW of Hoek van Holland (Ebels & Westerlaken 1996) and remained in association with Jackdaws *Corvus monedula* and Carrion Crows *Corvus corone* (van de Berg 1994) until at least 27 December 1995. Reports of single birds in Renesse in June 1997, 13-14 June 1999, early 2001 (GS) and of a dead bird found on 19 May 2001, may refer to the original bird (GO) or perhaps further arrivals.

The two original Hoek birds have survived eight Dutch winters, including the coldest for a decade when temperatures on 25 and 26 January 1996 reached –8°C in Rotterdam (GS). This pair raised single chicks in 1997, 1998 (Ebels 1998) and 2000. Thus five House Crows were in Hoek van Holland in February 2000, which increased to eight during 2001 (GO).

Additional records are: single birds flying at Den Haag, 31 March and 7 April 1999, may concern birds from the Hoek van Holland population, c. 20 km distant (GO); one at Muiden, near Amsterdam, August-December 1999 (TE, PE); one in Utrecht, 30 km S of Amsterdam, 18-19 December 1999 (GS), which may refer to the same bird (Berg & Bosman 2001); one at Kollummerland, Friesland, 5-19 August 1998; possibly the same bird at Winsum, Groningen, 20-22 September 1998 (GS); one at Breskens, Zeeland, 3 May 1999 (GO); one on the island of Schiermonnikoog, eastern Waddenzee, 21-23 March 2000; one in Hoorn, c. 40 km NE of Amsterdam, December 2000 (GS), which may also refer to the Muiden bird; one at Den Haag,13 May 2001, which may be one of the Hoek birds (GO).

Republic of Ireland

One seen and photographed in Dunmore East harbour, County Waterford, 3 November 1974 (Anon 1994b), was the first record of the House Crow for Europe. Although mentioned in the 1974/5 Waterford Bird Report (O'Meara 1976), it was largely overlooked until interest in the species increased following the Dutch arrivals. It was then accepted by the Irish Rare Birds Committee and admitted to Category D2 of the Irish List (McAdams *et al*. 1999).

The crow was first encountered perched in the rigging of a trawler, being described as "confiding" and in pristine condition. It remained in the area for 5 years, allegedly fed by some local people until at least August 1979, by which time it was in poor condition (Mullarney *et al*.1999). These authors suggested that the bird may have arrived on a cattle boat from the Middle East.

UK

One, identified initially as a Hooded Crow *Corvus corone cornix* and later as a House Crow, was seen on Bournemouth seafront on 25 December 1997 (Anon 1997). Despite searches the bird was not seen again (SR).

Denmark

There are two records: one seen on a single day in autumn 1986 near the coal harbour at Stigsnæs, Skælskør, Vestsjælland (RC); one on 17 September 1996, seen in a city park in Haderslev, Jylland (Anon 1996). Neither was reported to the Danish Rarities Committee.

France

There are two recent reports: one at Roubaix Nord, near Lille, 10 January 2000 (Davies 2001) which, if accepted, is the first record for France; one seen along the canal at Givors, south of Lyon, 18-21 May 2001 (Anon 2001) and photographed by G Bruneau (J-YF).

Spain

The House Crow which appeared on Gibraltar in spring 1991 (Ryall 1994) is also reported to have flown to Algeciras, *c*. 8 km away on the Spanish mainland (JP), the first record for Spain.

Middle East

Saudi Arabia

Having arrived in Jeddah in the late 1970s and Eastern Province in the early 1980s, populations have continued to increase rapidly and spread along the east coast. In Ras Tanura, Eastern Province, a control programme has been launched (Jennings 1995). They are now considered a nuisance in parts of Jeddah with reports of attacks on humans appearing in the local press (RS).

Oman

House Crows have spread and are now established along the coastal strip between Muscat and Sohar, and are beginning to spread inland in some areas (MJ).

Bahrain

Numbers appear to have remained relatively stable since they were first recorded as resident in the 1970s (MJ).

Qatar

House Crows were not reported from Qatar until the early 1990s. Records are: 26 House Crows seen at Ras Laffan, October 1993 - March 1994, around a new industrial town under construction *c*. 60 km north of Doha, and subsequently at a beach villa compound further south; up to 13 counted at Al Khar, *c*. 40 km north of Doha, February - April 1994 (Nation *et al.*1997); three seen for at least 3 hours at Ras Abu Ahboud, an urban part of Doha, 13 April 1994; on 24 April 1994, a newspaper article on the species triggered reports of 30-40 birds over the proceeding 7 months, from 4 separate locations on the east coast and offshore; several seen 15 km south of Doha in June1994; 4 reported at Halul Island, the main station for offshore oil and shipping, January - April 1994, where they were suspected to be raiding domestic pigeon nests (Nation *et al*. 1997).

Yemen

House Crows have long been established in Aden (Ryall 1994), spreading to adjacent Lahej and Abiyan, and then Hodeidd and El Khawka by the 1980s. They have become a major pest in the Aden-Lahej-Abiyan area due to the extremely high density that the House Crow population has achieved, presumably supported the ready availability of refuse, drying fish and market gardens. Jennings (1992) reviewed their status and described attempts to control their numbers in Aden.

Socotra

In late1996 or early 1997, two were reported by a ship's captain to have stayed with his ship from Aden, alighting when the ship arrived at Hadibu on Socotra. They nested in a tall palm in a nearby wadi and have remained there ever since. Numbers have increased to 6 in November 1997, 15 by September 1998, 20 by December 1998 (MJ) and 26 by May 1999 (OASA-S). An eradication programme was launched in December 1998 and has reduced the population (OASA-S).

Islands of the Indian Ocean

Seychelles

Further details have come to light concerning the Seychelles population, which modifies that given in Ryall (1994). A single bird arrived in Mahé on a ship from Bombay in 1970, but the breeding population did not establish until several birds arrived there in 1977 (CF). Though the population was centred on Mahé, isolated birds were also seen on Bird Island, Aride, Praslin, Moyenne, Cousin and Ile aux

Vaches Marines (Skerrett *et al.* 2001). Having reached a peak of *c.* 25 birds in 1986, centred around Anse Etoile, they appear to have been extirpated after a concerted eradication programme; the last two birds were shot in Victoria in mid-1994. Further single birds have been seen on Mahé since then: one was shot at the Providence refuse dump in mid 1998 and one seen at Machabee in mid-2000. Skerrett *et al.* (2001) suggested that these were probably new arrivals, emphasising the need for constant vigilance.

East Asia & Australia

Thailand

House Crows formerly occurred at Phet Buri, but there are no recent records (Madge & Burn 1994). A single bird was, however, seen 550 km to the south at Krabi on 5 June 2001 (Robson 2001).

Malaysia

Though long established in Malaysia they were, until recently, restricted to the mainland (Ryall 1994). Recent records elsewhere include one at Kota Kinabalu, Sabah, July 1997, and two on 7 August 1999 (SH). A local birdwatcher reported that there had been several around this city for "several years" (AS).

Indonesia

First recorded 6 September 1984, when one was seen at Cidaon in the Ujung Kulon National Park, Java (MacKinnon & Phillipps 1993). In September 1986, one appeared repeatedly and was photographed at the camp of the Zoological Expedition to the Karakataus on Anak Karakatau (Thornton *et al.*1990). It was tame, inquisitive and attempted to steal food scraps at the camp kitchen. One was seen perching on a telephone wire in Belawan, a major port *c.* 20 km from the city of Medan, Northern Sumatra (Shepherd 2000), probably in January 1998 (DH). This bird most probably arrived by boat from the neighbouring population *c.* 100 km away in Klang, Malaysia, across the Strait of Malacca.

Singapore

The population which numbered 1800 to 3700 in 1987 (Ryall 1994) has now grown to at least 20,000 birds, occupying 25 roosts in tall trees. They are considered to have reached pest proportions (SKL) and the authorities are now undertaking a control programme. The numbers are swollen by birds flying over from neighbouring Malaysia where there has long been a thriving population (DW).

Hong Kong

House Crows, possibly escaped captives (Viney *et al.* 1996), were recorded in Kowloon in ones and twos from the mid 1970s to 1989 (Ryall 1994). The population has clearly grown recently as flocks of 10 - 20 are now seen regularly in the area (Fung 2000). They probably breed near the new container port at Stonecutters (PL) and have been seen regularly around the port area since late 1998 (MK).

Taiwan

One was seen in the Lang-Yu Islet, Taitung County, 8 July 1980 (L). Although a typhoon occurred at the time, the nearest populations were then in Burma and Malaysia, 2,500 – 3,000 km away, and so ship-assisted introduction seems the most likely source.

The House Crow was recently included in Appendix II of the Checklist of Birds of Taiwan prepared by the Chinese Wildbird Federation (2000), indicating that it has been recorded since 1995. However, a photograph of a crow perched on a power line was not regarded, beyond doubt, to be a House Crow by the Taiwan Record Committee (W-hF)

Japan

A House Crow, unable to fly, was captured on a street near the Osaka Port of Konohana-ku, 9 January 1981, and was placed in Tennoji Zoo (Nakamura 1987). This record was accepted by the Bird Record Committee as a ship-assisted arrival but, remarkably, this crow was subsequently found to speak "good Japanese" and so has since been regarded as an escape or release from captivity (NI).

Australia

House Crows have arrived in Australia on many occasions since the 1920s (Ryall 1994). Up to June 2000, more than 50 arrivals have been recorded. In 1951, a pair nested in Fremantle, but this pair and all subsequent arrivals have been killed (MM).

Africa

Djibouti

After their arrival in 1958, the population in Djibouti city and later, in Obok, reached a high density, and there are now smaller populations in Tadjoura and Loyada (Archer 2001). According to Archer, an intensive control programme in the late 1990s has greatly reduced the Djibouti city population.

Somalia

Several dozen House Crows were seen in Berbera on the north coast in 1988, indicating a well established colony (Fry & Keith 2000). These may have spread by ship from the massive Aden population *c*. 280 km due north or from Djibouti. They are also present in Zeila *c*. 200 km to the west (Ryall 1994).

Kenya

Although established in Mombasa coast since the 1940s and Malindi, to the north, since the late 1970s, they did not spread further than *c*. 50 km inland, probably due to the arid unpopulated savannah that lay beyond (Ryall 1992). The Mombasa population grew to an estimated one million by 1991 (Schmidt 1996) despite various control attempts, and the Malindi population had also reached pest proportions by 1988 (Archer 1994).

Starting in 1984, a range of control strategies have been applied intermittently in the Mombasa area and along the Kenyan coast, including poisoning, nest destruction, trapping, reducing food availability and occasionally shooting (CR). In the mid 1990s, a further programme was implemented, along with monitoring of the crow population (Lens 1996). Likewise, in Malindi and Watamu, a control programme, using similar approaches, was launched in November 1988 with great success (Archer 2001).

In the early 1990s, a single bird was seen in a Nairobi city park and two at Hillcrest School, Nairobi, *c.* 500 km inland from Mombasa (GCS). These are most likely the result of deliberate releases or escapes.

Tanzania

The once dense and long established population of House Crows in Zanzibar was, due to its pest status, reduced by 80% between 1990 and 1995 through an intensive eradication programme funded by FINNIDA (Archer 1996). Funds ran out so that the programme was discontinued in 1995 (WCST 1998).

Since their arrival in Dar-es-Salaam in the 1950s, House Crows have increased to 15,000 - 20,000 (Schmidt 1996) and have spread not only along the coastal strip but inland as far as Morogoro, where recorded in 1999 (HR). Since July 1997, a control programme has also been in operation in Dar-es-Salaam (WCST 1998).

Mozambique

Further to the information provided by Ryall (1994), House Crows were present in Inhaca Island by the 1960s (Nhancale *et al.* 1998) and they have been recorded there and in Maputo since 1976 (IS). Liversidge (1985) described them as a breeding resident on Inhaca Island and also present in Maputo. According to Nhancale *et al.* (1998), there have been several unsuccessful eradication campaigns and a further one is under consideration.

In December 1976, IS saw 8 to 10 birds near the Polana Hotel in the beach resort of Maputo and, in September 1991, 6 near the docks. The long established population on Inhaca Island has increased from the *c.* 50 in the mid-1980s to *c.* 100 in 1999, concentrated mainly around the Inhaca Resort Hotel, but crows have not been recorded at other locations along the Mozambique coast (SM).

South Africa

House Crows may have been present in Durban since 1966-67 (Newmann 1974). They have subsequently spread through several coastal cities (Ryall 1994). Since their arrival in Cape Town docks in the mid 1970s, they have increased rapidly and in 1999, they were common around Cape Town International Airport, mainly in small groups although flocks of up to 50 birds are frequent (RD). Single House Crows have also been seen at the University of the Western Cape campus. The birds that arrived in Cape Flats in 1989 (Ryall 1995) persisted as a small colony but had not increased substantially by mid-1996. Nevertheless, the species is expected to become “a dominant and problematic urban species in southern Africa” (Berruti 1997). They have also spread northwards from Durban to Richards Bay (Allan & Davies 2001).

A control programme employing shooting, trapping, nest destruction and poisoning was launched in Durban in 1989 (Berruti & Nichols 1991). This reduced the population from > 1000 to *c*. 150 by 1991 but numbers had risen again to > 500 by 1993 (Berruti 1997).

The Americas

Barbados

In 1994, a House Crow arrived in Barbados, the first such record for the Neotropics (Norton 1995). It was present from early May to August and during this period it was extremely mobile, being seen on the east and west coasts, at Bridgetown in the south, and in the centre of the island at *c*. 280 m a.s.l. (MF).

Chile

Further details of two birds which arrived in Punta Arenas in 1993 (Ryall 1995) have become available (Matus 1998). The birds, first sighted on 10 October 1993, were seen repeatedly foraging near a meat packing plant. They remained together for several months but at the beginning of the austral winter one crow was seen perched close to a chimney. The last record was on 8 June 1994, so that both disappeared during the austral winter of 1994.

U.S.A.

On 25 January 1995, a single House Crow was photographed at Cabrillo Beach, Los Angeles Harbour, California (KG). It was present for a “couple of years“ prior to being photographed. Although the species has arrived on the Atlantic Coast on 2 or perhaps 3 occasions (Ryall 1995), this appears to be the first record for the west coast of North America.

Conclusions

Range Expansion

The House Crow’s spread has continued unabated since the reviews of their distribution published previously (Ryall 1994, 1995) with, for example, a further extension eastwards through the islands of SE Asia. Introduced populations already established are increasing and consolidating as is evident in the Arabian Peninsula and South Africa, and they have now established breeding populations in 20 countries outside their native range. In addition birds, mainly single, have been reported from about 10 other locations, where they have so far failed to establish breeding populations. The latter records undoubtedly represent the tip of an iceberg, as many arrivals must go unnoticed and/or unreported.

The majority of records are from ports and other coastal locations, reinforcing the past observation that most spread is ship-assisted. In keeping with their regular appearance in Australia since the 1920s, House Crows continue to show a capacity for long ocean crossings as demonstrated by their appearance in Chile, California, Charleston, New Jersey and Barbados. These longer journeys have undoubtedly been made easier in recent years by the increased speed of modern ocean-going vessels. Not all arrivals are ship-assisted, however; their occurrence in Osaka and Nairobi, and perhaps Hong Kong, may be attributable to deliberate releases or escapes of captive birds.

Concerns and control

They have continued to attained pest status as predators of native avifauna, crop raiders, nuisance, potential public health risk and so forth (Ryall & Reid 1987, Archer 2001) in virtually all locations where their population has built up, such that control/eradication programmes have been or are in progress at many sites; most recently in Djibouti, Socotra and Singapore. Feare & Mungroo (1989) have emphasized the particular threat House Crows pose to island endemic birds. With the exception of the Seychelles, where eradication has been achieved, control measures have only secured a temporary respite with populations quickly recovering as soon as control efforts are slackened, as in Mombasa in the late 1980s (*pers. obs*), in Durban (Berruti 1997) and in Zanzibar, where a very successful programme in the 1990s was discontinued due to lack of funds (Archer 2001). The approach adopted in Australia of "shooting on sight" has proved very successful in preventing House Crows from establishing at all, despite > 50 arrivals, presumably from the Indian subcontinent, over the last 80 years.

The continued presence of the small but increasing population in Hoek van Holland is noteworthy as this is the first evidence that the species can survive temperate winters and breed successfully. Added to this are other European records, albeit of solitary birds, from the Netherlands, Ireland, France, Gibraltar/Spain, Denmark and perhaps UK. Although these isolated birds have so far failed to establish breeding populations, the fact that some have probably survived for 5 to 7 years, in Waterford and Renesse, increases the chances of later arrivals facilitating breeding. The Hoek birds are a popular local attraction to birdwatchers and this, combined with public sensitivities on the control of alien bird species, suggests that the Dutch birds will persist unmolested. If, however, as seems to be the case, the population does gradually build up, lack of early action may make later control very difficult and expensive.

As introduced populations of House Crows increase, uncontrolled due to inadequate resources and/or lack of awareness, they may act as secondary nuclei of spread, so accelerating the overall rate of dispersal. Indeed, those appearing in Europe may well have originated from the long established Suez population, and those in Socotra from Aden. Ryall (1994) suggested that Sumatra and Madagascar may be under imminent threat of invasion. House Crows arrived in Sumatra in 1998, but as yet there are no reports from the ports of Madagascar.

Request for information

All records of new locations or update information on existing introduced House Crow populations, including numbers, activity, food sources, possible origin and dates, would be greatly appreciated and can be sent via *www.housecrow.com* or e-mailed directly to *c.ryall@farn-ct.ac.uk* .

Contributors

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MEMBERSHIP

See also website: **http://www.boc-online.org**

Following the approval of the changes to the Rules of the Club at the Special General Meeting on 31st October 2000, membership of the Club was extended to non-Members of the British Ornithologists' Union. **Subscription rates**, as from 1 January 2002 are now:

BOU Members	£12.00	US$ 23.00
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The Membership List 2002 is available, free of charge to all requesting a copy, on application to the Hon. Secretary (address below). This list shows addresses (including E-mail addresses, where known), for all paid-up Members as at 31 December 2001. Members are requested to inform the Hon. Secretary of all corrections or changes, without delay, for despatch of the *Bulletin*. To offset the cost of postage, any contribution, or a stamped and addressed (A5-sized) envelope will be gratefully accepted.

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Correspondence on membership, changes of address and all other matters should be addressed to:
Hon. Secretary, Cdr M.B. Casement, OBE, RN, Dene Cottage, West Harting, Petersfield, Hants, GU31 5PA, UK (or E-mail: mbcasement@aol.com). For details of Club Meetings see inside front cover.

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Authors are invited to submit papers on topics relating to the broad themes of taxonomy and distribution of birds. Descriptions of new species of birds are especially welcome and will be given priority to ensure rapid publication, subject to successful passage through the normal peer review procedure; they may be accompanied by colour photographs or paintings. On submission, **two copies** of manuscripts, typed on one side of the paper, **double spaced** and with **wide margins**, should be sent to the Editor, Prof. Chris Feare, 2 North View Cottages, Grayswood Common, Haslemere, Surrey GU27 2DN, UK. **Note that electronic versions are not required on first submission.** Where appropriate half-tone photographs may be included and, where essential to illustrate important points, the Editor will consider the inclusion of colour figures (if possible, authors should obtain funding to support the inclusion of such colour illustrations).

When papers are accepted, revisions should be returned to the Editor as both a **hard copy,** as outlined above, and also on a 3.5" disk, as **Word or Wordperfect files** for PC. At this stage authors should send their email addresses, as completion of the editing process and proof reading will be undertaken electronically.

For instructions on style, see the inside rear cover of *Bulletin* 122 (1) or the BOC website:

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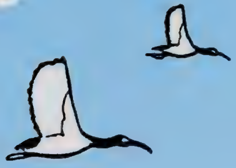

Volume 122 No. 4
December 2002

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MEETINGS are held at **Imperial College**, South Kensington, London, SW7, usually in the **Sherfield Building**. The nearest Tube station is at South Kensington; a map of the area will be sent to members, on request. See also website: **http://www.boc-online.org**. (Limited car parking facilities can be reserved, on prior application to the Hon. Secretary).

The cash bar is open from **6.15 pm**, and a buffet supper, of two courses followed by coffee, is served at **7.00 pm.** (A vegetarian menu can be arranged if ordered at the time of booking). Dinner charges are currently **£18.50 -** as from 1 January 2003. Informal talks are given on completion, commencing at about 8.00 pm.

FORTHCOMING MEETINGS

Tuesday 21 January 2003 - Jonathan Ekstrom - '*Singing for your supper: the bizarre sex life of Madagascar's Greater Vasa Parrot*'.
Jonathan last gave a talk to the BOC, in 1999, about the remarkable birds of New Caledonia, including a report of the rediscovery of the elusive New Caledonian Owlet-Nightjar that was made during the Cambridge conservation expedition to the island in 1998. Since then he has been studying the behavioural ecology of the Greater Vasa Parrot of Madagascar for his PhD, based in Tim Birkhead's lab at Sheffield University. His research has revealed that, in contrast to most Psittaciformes, Greater Vasa Parrots are highly promiscuous and live in large breeding groups without pair bonds between individual birds. In addition, females are dominant to males and it is females who sing, defend territories and develop breeding season ornamentation. Although this is all new to science, he also discovered it was common knowledge for the Malagasy people who call female Greater Vasa Parrots 'the prostitute bird' on account of the females always chasing after the males...

Applications to the Hon. Secretary by **7 January** please.

Tuesday 25 March - M.P. Walters - *"Hypothetical Birds"*.
Michael Walters is well-known to anyone who has visited the Natural History Museum at Tring within the last 30 years, where he has been Curator of Egg Collection - the largest in the world - since 1972. He has a special interest in extinct birds, and is author of numerous books and ornithological papers including *The Complete Birds of the World* (1980), *Eyewitness Handbook: Birds Eggs* (1994), and co-author, with Alan Knox, of *BOC Occasional Publications* Series No 1, *Extinct and Endangered Birds in the Collections of the Natural History Museum* (1994). He is near to completing a book about birds described in old literature but whose descriptions have never satisfactorily been identified with any known extant species.

Applications to the Hon. Secretary by **11 March** please.

Future meetings - **Tuesdays**:
29 April - AGM and social evening
24 June, 23 September, 4 November and 2 December.

Overseas Members visiting Britain are especially welcome at these meetings, and the Hon. Secretary would be very pleased to hear from anyone who can offer to talk to the Club, in 2003 or 2004, giving as much advance notice as possible - please contact: Michael Casement, Dene Cottage, West Harting, Petersfield, Hants. GU31 5PA. UK. Tel/FAX:01730-825280 (or Email: mbcasement@aol.com).

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Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 122 No. 4 Published 19 December 2002

CLUB NEWS

Membership News

It is with great regret that we report the death of **Prof. Dr. Wilhelm Meise** (2001-2002, ex-subscriber), on 24 August - just short of his 101st birthday – see obituary below.

Greg Alexander (Club Member 1994 -) has privately published a delightful booklet entitled *The Birds of Nursling - a recent history of Bird Life in a village near Southampton* (2000, 79pp). This reports meticulously his personal observations and ringing and nesting records over 20 years to demonstrate the breeding success and population changes, species by species, over this study period. His conclusions concerning species in decline convincingly demonstrate the scale of the problem in this local area. Highly readable, with excellent illustrations, this booklet appeals to both serious and part-time birdwatchers, and should inspire others to follow the author's example, to conduct and write similarly of their own local areas - MBC.

Copies available @ £7.50 (post free) from: G. Alexander, 14 Blake Close, Nursling, Southampton SO16 0TL (Tel: 023 80 731743) or E-mail: greg@nursling.fsnet.co.uk

Subscription Rates for 2003

These are unchanged for next year @ **£18.00 p.a.** but **£12.00 only** for paid-up Members of BOU - see details inside rear cover. Please complete NOW the enclosed subscription renewal form to avoid the need for subsequent reminders, thus saving administration costs. **Members with Bankers Standing Orders in force, or who have paid in advance for 2003, need take no further action**.

The BOC Website - http://www.boc-online.org This continues to expand and grow in usefulness. Do please look at it and let us have your suggestions for improvement.

Meetings. Seven dinner meetings are planned for 2003 - see details inside front cover.

BOU Meetings

- 11-16 April 2003. Long-term studies of birds, in collaboration with the EGI annual student conference, Oxford University. Includes BOU AGM on Sat 12 April.
- Autumn 2003. Birds and Public Health (re-scheduled from November 2002)
- Spring 2004. Farmland birds. Date and venue to be announced.
- Autumn 2004. Research and conservation in the UK Overseas Territories.

For further details see the BOU website: www.bou.org.uk and for bookings contact steve.dudley@bou.org.uk

Obituary – Prof Dr Wilhelm Meise

Prof Dr Wilhelm Meise, who died on 24 August 2002 just a few weeks short of his 101st birthday on 12th September, was our oldest BOC member and one of the most prominent figures in ornithology. However, his career was far from straightforward. Trained as teacher Meise went back for further education in 1924 enrolling for science and Russian at the Friedrich-Wilhelms-Universität at Berlin, while catching up with Latin and getting an external High School exam. Short of any money, Meise earned his living by playing cello in a little orchestra at Berlin-Johannisthal. In 1926, initiated and supervised by Prof Dr Erwin Stresemann, he wrote his thesis on the hybridisation of the Carrion Crow. He stayed on in the bird section of the Museum für Naturkunde at Berlin for another one and a half years, working as an assistant for Stresemann. In 1929, Meise moved to Dresden becoming an assistant and later full curator of the zoological collections of the Staatliche Museum für Tierkunde und Völkerkunde. A year later Meise married, and subsequently three children were born. Meise gave one of the main lectures at the International Ornithological Congress in Oxford in 1934. Subsequently Meise stayed a faithful visitor of all other world congresses until 1986. The war and subsequent Siberian prison camp imposed a break on science, but in 1950 Meise had a come-back when he was made the head of the mammal section at the Berlin Museum. At the age of 50, he commenced his last, but longest life position, when he joined the zoological institute & museum of the Universität Hamburg as curator, later head curator and lecturer. In 1976 he was honoured for his work with the title "professor". Meise was many years the chair of the Verein Jordsand, which publishes the ornithological & conservational journal *Seevögel*, and initiated in this role the conservation of several areas along the north German mud-flats. However, besides many other scientific publications (over 170) Meise is best known for his work on *Grzimeks Tierleben*, *Die Naturgeschichte der Vögel* and *Das Handbuch der Oologie*. Meise maintained a keen interest in ornithology even at advanced age, when he, then aged 98, wrote to Michael Walters of the Natural History Museum a card indicating that Walters' latest publication on eggs of the Pink-headed Duck (*Bull. B.O.C.* 118(3): 187-191) showed interesting differences to Meise's own studies. Subsequently I had some correspondence with Prof Dr Meise, obtaining the personal data used in this obituary.

Frank D. Steinheimer

The 911th meeting of the Club was held on Tuesday 24 September 2002, in the Sherfield Building Annexe, Imperial College. 24 Members and 9 guests attended.

Members present were: Dr C.F. MANN (*Chairman*), Captain Sir Thomas BARLOW Bt., DSC, RN, Mrs D.M. BRADLEY, P.J. BELMAN, D.R. CALDER, Cdr M.B. CASEMENT RN, Professor R.A. CHEKE, Dr. J. COOPER (*Speaker*), F.M. GAUNTLETT, Rev. T.W. GLADWIN, D. GRIFFIN, C.A.R. HELM, R.H. KETTLE, Mrs A.M. MOORE, R.G. MORGAN, D.J. MONTIER, Mrs M.N. MULLER, P.J. OLIVER, R.C. PRICE, Dr. P.W.G. SALAMAN, P.J. SELLAR, S.A.H. STATHAM, N.H.F. STONE and M.P. WALTERS.

Guests attending were: D. BRADLEY, Mrs J.B. CALDER, Mrs C.R. CASEMENT, Mrs M.H. GAUNTLETT, Ms J. GOFFE, Mrs J.M. GLADWIN, Mrs M. MONTIER, P.J. MOORE and Mrs S. STONE.

After dinner, Dr Joanne Cooper gave a highly entertaining illustrated talk about her recent conservation work on the Chatham Islands titled *Storm Petrels in the soapdish and Black Robins on the verandah*. The following is a brief synopsis:

The Chatham Islands lie *c.* 870 km due east of New Zealand, a group of two large and over a dozen smaller islands on the convergence between subantarctic and subtropical waters. Prior to human colonisation, the archipelago was inhabited by over 100 bird species, many of them known from abundant fossil remains. Characterising the terrestrial communities was a high proportion of endemics evolved from mainland New Zealand species, and the islands also supported a remarkable range of sea birds, including at least 21 species of petrel. Following the arrival of humans, the combination of hunting, habitat clearance, introduced mammalian predators and livestock proved disastrous to the islands' avifaunas. Some 18 taxa went extinct following Polynesian settlement around 500 years ago, amongst them at least six endemics. After Europeans arrived in 1791, a further eight taxa disappeared, four of them endemics. Of the original communities, only 25 marine and 15 terrestrial species still breed there. Seventeen endemics survive, ten of them rare or endangered.

The Chatham Islands are now the focus of some of the most intensive conservation projects anywhere in the world. These include the renowned efforts to save the charismatic Black Robin *Petroica traversi,* once the rarest bird in the world (Butler, D. & Merton, D. 1992. *The Black Robin: Saving the World's Most Endangered Bird*. OUP), and the ongoing recovery programme to conserve the elusive Chatham Island Taiko *Pterodroma magentae*. However, there are many lesser-known species being assisted in equally dedicated fashion.

One such species is the Chatham Island Petrel *Pterodroma axillaris*, thought to have a population of *c.* 1,000. Breeding only on the 218 ha South East Island, a protected Nature Reserve, their particular problem is intense competition for burrows with the very common Broad-billed Prion *Pachyptila vittata*. Chatham Island Petrels are elusive and strictly nocturnal on land. Relatively little was known about their habits until a formal research programme was initiated in the late 1980s, and conservation began in the early 1990s. As a result, some 145 burrows have been located to date and these are now closely monitored and managed to improve breeding success. Prions still present a serious problem, as prospecting adults will attack and kill Chatham Petrel chicks to take possession of a burrow, but techniques to reduce prion interference are constantly being explored, for example the use of neoprene door flaps fitted to burrow entrances to deter prion entry. Longer term, it is hoped that Chatham Petrels can be encouraged into new artificial colonies, both on South East Island, away from main prion concentrations, and on a second island in the Chathams, by translocation of chicks.

Whilst the history of the birds of the Chatham Islands will always stand as a tragic testament to the possible consequences of human activities, they must also now be regarded as a hopeful example of what conservation can achieve. South East Island and the endangered species it is sanctuary for, are compelling proof of the persistence and endurance of nature – when it is given a chance (New Zealand Department of Conservation, 1996. *Chatham Islands: Heritage and Conservation*. In association with Canterbury Univ. Press).

Jo acknowledged her thanks to the Chathams Area Office, Department of Conservation, for the opportunity to visit the islands, and to Helen Gummer for updates on Chatham Petrels.

The talk stimulated a lively question and discussion period.

BOOK RECEIVED

Beiträge zur Kultur- und Naturgeschichte Südamerikas insbesonders von Amazonien. *Rudolstädter Naturhistorische Schriften, Suppl. 4, pp 1-124.* ISBN 3-910013-42-2. No price given.

This somewhat eclectic publication contains eight papers, of which one focuses on Amazon rainforest conservation, two are anthropological, one describes a new species of rodent ectoparasite and four are ornithological. The major contribution among the latter is a substantial paper by Jürgen Haffer entitled "A rare hybrid manakin (Aves, Pipridae) and the origin of vertebrate species in Amazonia", which contains considerable new information regarding the unique specimen described by Sclater as *Pipra heterocerca.* This leads into a discussion of the *Pipra aureola* superspecies, which is then widened into a review of speciation models which have been proposed for the Amazonian biota. The other bird papers comprise a review of Jamaican hummingbird biology, the breeding biology of city-nesting Barred Antshrikes *Thamnophilus doliatus* in São Paulo, Brazil, and a review of the chewing lice (Phthiraptera) parasitising Burrowing Parrots *Cyanoliseus patagonus* in Argentina.

Robert Prys-Jones

The taxonomic importance of two early paintings of the Pink-headed Duck *Rhodonessa caryophyllacea* (Latham 1790)

by Clemency Fisher & Janet Kear

Received 17 May 2001

A fine painting of a male Pink-headed Duck *Rhodonessa caryophyllacea*, acquired by the Liverpool Museum, National Museums & Galleries on Merseyside (NMGM) in 1998, seems to be the earliest depiction of this species from Bangladesh and Burma, which is now thought to be extinct (Fig. 1). The painting was executed between 1777 and 1782 by Bhawani Das, a Hindu miniaturist of the Moghul tradition and is entitled "Redhead" in Persian. It was commissioned by Lady Impey, the wife of Sir Elijah Impey, Chief Justice of the Supreme Court in Bengal, who was based in Calcutta between 1774 and 1782. The model for the painting was, in our opinion, alive and so closely observed that it must have been in captivity at the time. Lady Impey is known to have established, whilst in Calcutta, a considerable aviary and menagerie of native wildlife. Many of these species were painted, at her request, by some very talented local artists, who produced between them over 300 watercolours (Christies' 1998; Lugt 1938, 1953).[1]

Sir Elijah and his wife returned to England with the pictures in 1783, and some were used by the distinguished English ornithologist John Latham (1740-1837) as the basis for his type descriptions of several Indian and Asian birds new to science. After Sir Elijah's death in 1809, part of the Lady Impey collection was sold at Phillips in London (in May 1810, see footnote). At some stage, possibly at this sale, about twenty of the Impey paintings were purchased by the 13th Earl of Derby, of Knowsley Hall, near Liverpool. The Earl was a notable zoologist and friend of Latham's, and it was probably Latham who alerted him to the existence of these unique pictures. The four recently purchased by NMGM were previously part of this Knowsley group.

In effect, the Impey paintings from which Latham described new species became the type specimens of the taxa that he named. As such, they are of enormous zoological, as well as artistic, importance. There must be many as yet unknown Latham types amongst the Impey paintings, particularly those that are now in private hands. Two of the Impey paintings recently purchased by NMGM are undoubtedly types; of *Cuculus poliocephalus* Latham 1790, the "Grey-headed Cuckow" and of

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[1] Footnote. The original Phillips catalogue of the first sale of items from the Impey Collection seems to be unobtainable, even in the libraries of Phillips itself, the British Library or the Victoria & Albert Museum. The total number which was arrived at by Christies' (1998), of 326 watercolours sold, has come from an unknown source. The only vaguely reliable figures of the size of the Impey Collection can be compiled from Lugt (1938, 1953), where he records in French the numbers of "Tableaux" (pictures) and "Dessins persans" and "Dessins chinois" (Persian and Chinese drawings) sold by members of the Impey family, which may (or may not) refer to zoological items commissioned by Lady Impey. These total 340 and are listed under sales in 1810 ("Sir Elijah Impey") and 1845 ("Miss Impey").

Sitta longirostra Latham 1790, the "Long-billed Nuthatch". The watercolour of the Pink-headed Duck may have the same status.

The stance of the duck in the Impey picture immediately brought to mind a much cruder drawing of the Pink-headed Duck in Latham's *General Synopsis of Birds* (1787, *Supplement* vol. 1, plate 119; opposite page 276. See Fig. 2). This illustration accompanied Latham's account of the "Pink-headed D[uck]", a name he formally

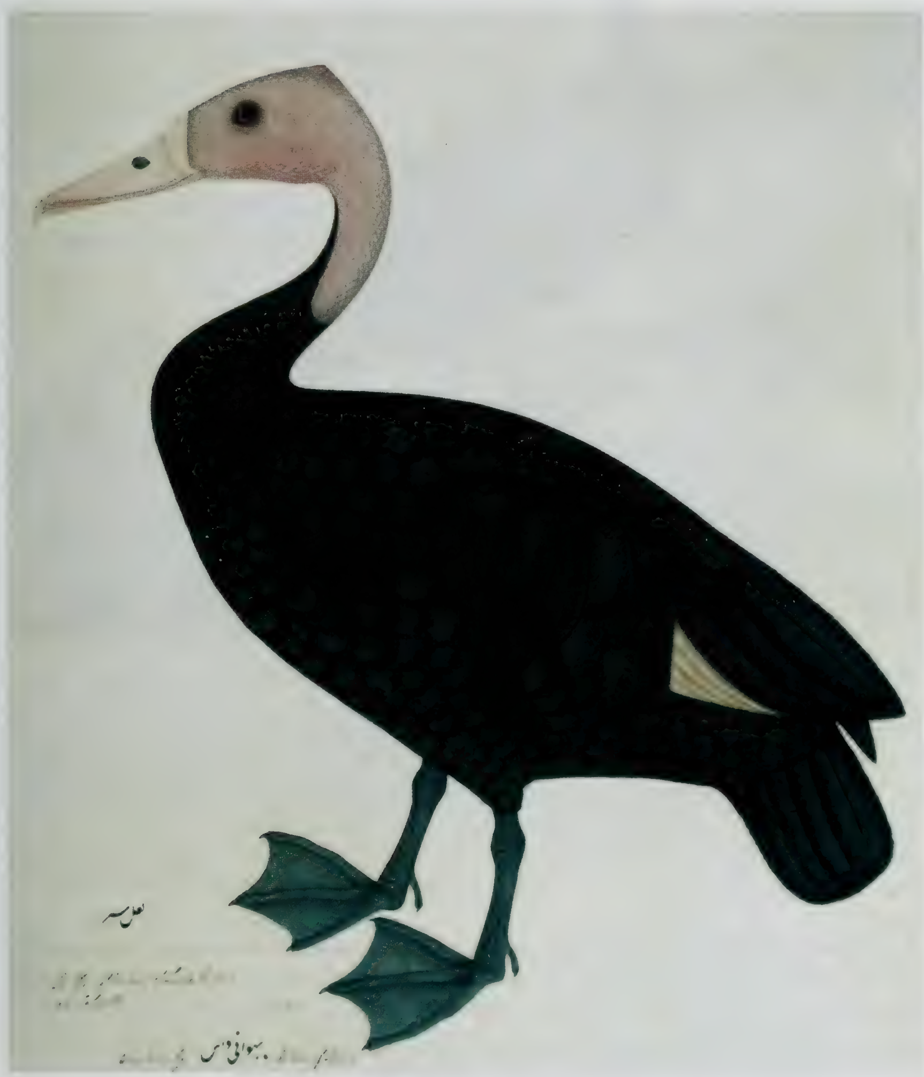


Figure 1.

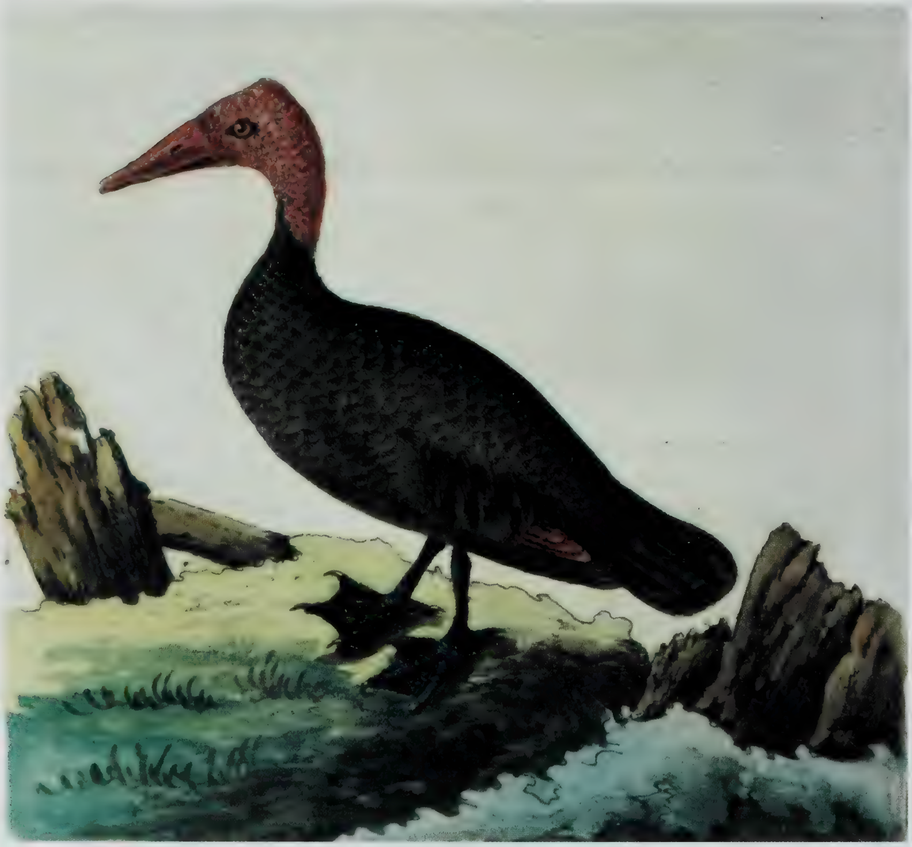


Figure 2.

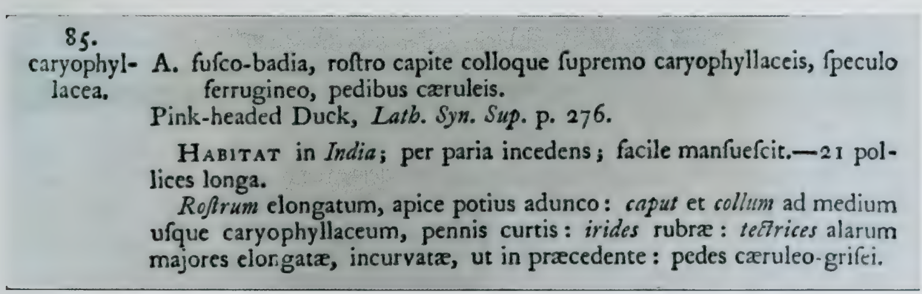
latinised three years later as *Anas caryophyllacea* ("the carnation-pink duck") in *Index Ornithologicus* (1790, see Figs. 1 & 2). Although Latham did not specify in his type description that he was deriving his account from the Impey painting (he did, for instance, specify that Impey paintings were the basis of his accounts of *Cuculus poliocephalus* and *Sitta longirostra*), there seems little doubt that he had seen Bhawani Das' artwork, even if he did not actually have it in front of him at the time.

The information that the Impey portrait and Latham's comments gives us on the history of the Pink-headed Duck in captivity is extremely useful. There is little doubt that Bhawani Das was working from a living bird in good condition. Latham reported in *Synopsis* (1787) that the Pink-headed Duck "Is often kept tame" (information that he obtained from a Mr Middleton); in his type description in 1790 that it was "facile mansuescit" (easily tamed) (Fig. 3) and in 1824 that it "is often kept tame, and becomes tolerably familiar". The Pink-headed Duck was also kept in captivity (during the nineteenth and twentieth centuries) in England; at the Zoological Society of London in 1874, at Lilford Hall in 1882 and by Alfred Ezra at Foxwarren Park in Surrey, where it was photographed in the 1930s. Though birds lived for some years, they never bred. There are also records of captive Pink-headed Ducks at Clères in France, and one even reached Connecticut, U.S.A. (Fooks 1947, Delacour 1956, Ali 1960, Prestwich 1974, Kear 1990).

Although Latham (1824) mentioned that he had seen drawings of female Pink-headed Ducks, he unfortunately did not specify whether these drawings were also in the Impey collection. Latham himself never visited India, so he was entirely dependent on written descriptions, drawings and, in some cases, skins that were brought back by others. Working from such material can cause even the most careful ornithologist to be misled, sometimes in a cumulative fashion!

When describing the female, Latham (1824) mentioned a supposed difference in the shape of the wing coverts from those of the male; in both his preceding accounts he had referred to these coverts in the male as being curved downwards at the end. Latham's picture of the Pink-headed Duck in *Synopsis* (Fig. 2) draws particular attention to the wing coverts; he showed them as being large, darker than the rest of the plumage, and turning downwards. Plate 179 in his 1824 account, which is a version of the *Synopsis* illustration, emphasises these feathers even more. In reality, the feathers are not like this.

Latham's difficulty in depicting these feathers correctly seems to have originated with the Impey painting. This shows the wing coverts as much bigger and more



85.
caryophyllacea. A. fuſco-badia, roſtro capite colloque ſupremo caryophyllaceis, ſpeculo ferrugineo, pedibus cæruleis.
Pink-headed Duck, *Lath. Syn. Sup.* p. 276.

HABITAT in *India*; per paria incedens; facile manſueſcit.—21 pollices longa.

Roſtrum elongatum, apice potius adunco: *caput* et *collum* ad medium uſque caryophyllaceum, pennis curtis: *irides* rubræ: *tectrices* alarum majores elongatæ, incurvatæ, ut in præcedente: pedes cæruleo-griſei.

Figure 3. Photograph of Latham' s original type description of the Pink-headed Duck in *Index Ornithologicus*, 1790.

Translation of Latham's type description.
85. carnation-pink. *Anas* dark chestnut brown, with beak, head and top part of neck carnation-pink, speculum rust-red, and feet dark blue.
Pink-headed Duck of Latham's *Synopsis, Supplement* page 276.
Habitat India; occurring in pairs; easily tamed. – 21 inches long.
Beak elongated, with a rather hooked tip; head and upper half of the neck carnation-pink, with short feathers: irides red; greater wing coverts elongated and curved, as in the preceding account of the [male Western Duck or Garganey]: feet dark bluish-grey.

prominent than they actually are. However, they are also drawn much higher on the body than in Latham's version, and they are not curved downwards. Errol Fuller (pers. comm.) points out that Bhawani Das was unlikely to have had the anatomical skills that modern bird artists take for granted, and that the painting's great charm and importance has little to do with sophisticated drawing technique. We have no real idea about the intentions of Bhawani Das. Was he trying to produce an absolutely truthful image, or one that was merely decorative? Other feathers are also over-embellished; for example, the pink feathers on the head are painted in an attractive but inventive mosaic pattern.

On the evidence of Latham's drawings and description, it is likely that he had never handled a Pink-headed Duck dead or alive — nor observed its remarkable pink and chocolate plumage — but learned of it only from having seen Bhawani Das' painting.

Recent attempts to find the Pink-headed Duck in its traditional marshland haunts of north-east India have been unsuccessful. The last individual probably died at Foxwarren in England in the late 1930s (Kear 1990). There are good numbers of cabinet skins and mounts of the Pink-headed Duck in museums around the world, which Salim Ali attempted to list in 1960. He realised that his listings were incomplete and appealed for further information. To this end we hope to publish a more complete list of museum holdings of specimens of Pink-headed Duck (including the six which are in the Liverpool Museum) and would appreciate any information readers might have.

Acknowledgements

We are most grateful to Malcolm Largen and Michael Walters for advice on nomenclature, to Errol Fuller and George McInnes for advice on plumage and to Lucy Wood and John Edmondson for help with translating Latham's original description of the Pink-headed Duck. Peter Olney kindly advised us on the Impey paintings.

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The identity of Marcgrave's 'Ibiiau' and its bearing on the nomenclature of the Scissor-tailed Nightjar *Hydropsalis torquata* (Caprimulgidae)

by Nigel Cleere

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The 'Ibiiau' and 'Guiraquerea' were the first caprimulgids to be described from South America (Marcgrave 1648) and were subsequently renamed *Caprimulgus brasilianus* and *Caprimulgus torquatus* by Gmelin (1789). Schneider (1938) determined that they represented the female and male of the same species, namely *C. brasilianus* Gmelin (1789), this name having page priority over *C. torquatus* Gmelin (1789). Teixeira (1992) however, suggested that the 'Ibiiau' was unidentifiable and that the name of the species should be based on the 'Guiraquerea'. He therefore accepted *Caprimulgus (= Hydropsalis) torquatus* as the valid name for the Scissor-tailed Nightjar and treated *C. brasilianus* as a species *incertae sedis.* Examination of Marcgrave's work reveals that the 'Guiraquerea' is clearly a male Scissor-tailed Nightjar, but the identity of the 'Ibiiau' seems worthy of further comment.

The original watercolour of the 'Ibiiau' appeared as page 260 in the first volume of Count Moritz's *Handbook,* which later became *Libri Picturati* A36 (Schneider 1938, Whitehead 1976). The bird is depicted on the branch of a tree stump and is fairly nondescript, although the head is small and rounded, there are no rictal bristles and the tail is slightly forked. The lack of rictal bristles is of special interest, since they are clearly illustrated on Marcgrave's other nightjars, including the 'Guiraquerea'.

In Marcgrave (1648), the watercolour was reproduced as a woodcut (middle figure) on page 195. As a result, the bird is even more nondescript, although the features of the head, tail and lack of rictal bristles are reproduced, and the tree stump is replaced by what appears to be a rock. The accompanying description is rather poor, but contains several points of interest, namely, that the bird is the size of a swallow, has wings which reach the end of the tail which is two inches long and has underparts which are barred black and white like a sparrowhawk. No mention is made of rictal bristles or a nuchal collar, although both are included in the description of the 'Guiraquerea'.

I believe that the illustration and description of the 'Ibiiau' in Marcgrave (1648) could represent either the Least Nighthawk *Chordeiles pusillus* or the Band-tailed Nighthawk *Nyctiprogne leucopyga,* the latter a fairly widespread species in Brazil (Cleere 1998) even though it does not occur in the region visited by Marcgrave. I therefore agree with Teixeira (1992), that the 'Ibiiau' is best considered unidentifiable and the correct name for the Scissor-tailed Nightjar should be *Hydropsalis torquata* (Gmelin 1789).

Acknowledgements

I wish to thank Effie Warr at the Natural History Museum, Tring and Linda Birch at the Alexander Library, Edward Grey Institute, Oxford, for their kind assistance in helping me to track down the relevant literature. I would also like to thank David Christie for all his help in preparing this note and José Fernando Pacheco for commenting on an earlier draft.

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Species limits in the Brown Boobook *Ninox scutulata* complex

by Ben King

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Most of the currently recognized subspecies of Brown Boobook or Brown Hawk-owl *Ninox scutulata* were originally described as separate species, but subsequent authors have followed Peters (1940) in maintaining them as members of a single species. Indeed, most of these taxa are quite similar morphologically. However, like Oba (1988), but *contra* König *et al.* (1999), I found that the territorial songs of some of the races differ so markedly as to call their conspecificity into question. Given that voice is the primary means of communication for nocturnal birds, selective pressure for intraspecific retention of stereotyped songs is likely to be strong, and nocturnal birds with different songs are therefore likely to represent different species.

The aim of this paper is to examine the taxonomy of this group of owls in relation to the form of their songs. Tape recordings were obtained of the territorial songs of each of the 11 subspecies of *Ninox scutulata* recognised by König *et al.* (1999). The sources of these recordings are given in the Acknowledgements. Sonograms were made using Canary 12.4, the Cornell Bioacustics Workstation of the Bioacustics Research Program at the Cornell Laboratory of Ornithology.

Voice

Comparison of these vocalizations showed three distinct songs, one common to a southern group comprising eight resident subspecies: *N. s. hirsuta* (Temminck) 1824, Sri Lanka and S. India; *N. s. lugubris* (Tickell) 1833, Pakistan, N. India, Nepal; *N. s. obscura* Hume 1873, Andaman and Nicobar Islands; *N. s. burmanica* Hume, 1876, Assam, S. China, SE Asia; *N. s. scutulata* (Raffles) 1822, Malaya, Sumatra; *N. s. borneensis* (Bonaparte) 1850, Borneo; *N. s. javanensis* Stresemann 1928, Java; *N. s. palawanensis* Ripley and Rabor 1962, Palawan.

The second song type was given by the two northern subspecies: *N. s. japonica* (Temminck and Schlegel) 1844, breeds in Ussuriland, Korea and the main Japanese Islands to Central Sichuan (Cheng, 1987) and Fujian in China, winters in SE Asia, Philippines and Indonesia (except Irian Jaya); and *N. s. totogo* Momiyama 1931, resident (Brazil, 1991) Ryu Kyu Islands and Taiwan.

The third song type was given by *N. s. randi*, Deignan 1951, of the Philippines (except Palawan).

The song of the southern group (Fig. 1) is a hollow mellow double note *whoo-wup, c.* 0.4-0.5 sec. in duration, with a rising inflection and accent on the second syllable. The frequency of the first note is 0.4-0.7 KHz, while the second is mostly 0.5-0.9 KHz, with no audible gap between the two notes. The double note is uttered in a continuous series with about 0.6-0.9 sec. between notes (Fig. 2).

By contrast the song of the northern group (Fig. 1) consists of two (sometimes three) mellow, hollow *whoop* notes 0.1-0.25 sec. in duration on the same frequency (0.5-0.85 KHz), separated by a gap of 0.25-0.5 sec., expressed as a couplet (occasionally triplet). The couplets are uttered in a continuous series with about 0.4-0.9 sec. between couplets (Fig. 2).

The song of *N. s. randi* (Fig. 1) is a hollow, mellow couplet similar to that of *N. s. japonica*, but the two notes are lower pitched (0.3-0.6 KHz), each note falling somewhat in pitch (rather that appearing slightly arched), and are more closely spaced (0.2-0.3 sec. apart). The couplets are uttered in a continuous series with about 0.3-0.6 sec. between couplets (Fig. 2).

Fig. 3 is a wave form sonogram showing sound energy emanating from a central axis. The two notes of the double note of southern *Ninox scutulata* (represented here by *burmanica* and *hirsuta*) are clearly shown, as are the two widely separated single notes of the couplets of *N. s. japonica*, *N. s. totogo* and *N. s. randi.*

Morphometrics

The birds with a song that defines them as the northern group differ from the southern group by their proportionately shorter tail (Table 1) and by their more pointed wing (Table 2). A scatter plot of wing and tail measurements of the specimens measured in this study (Fig. 4) shows that while subspecies that comprise the southern group tend to have a similar wing/tail ratio, migratory Japanese birds and Philippine *N. s. randi* are separable on this basis.

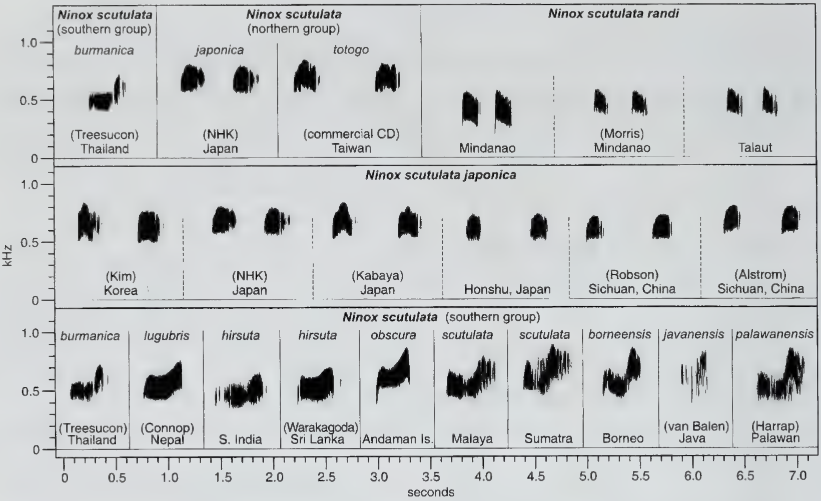

Figure 1. Territorial songs of the eleven forms of the *Ninox scutulata* complex. The top row allows comparison of the songs of the three song types found in the complex. The southern group (see text – here represented by *N. s. burmanica*) has a double note, the second note higher in pitch. The songs of the northern pair (*N. s. japonica* and *N. s. totogo*) and *N. s. randi* are couplets, *randi* differing by giving lower-pitched notes which are downwardly inflected (rather than in a shallow arch) and by having a shorter interval between notes. *N. s. japonica* has a shorter interval between notes than *N. s. totogo*. Row two shows calls of *N. s. japonica* from various parts of its range showing their consistency. The bottom row shows samples of all eight subspecies of the southern group, showing their consistency.

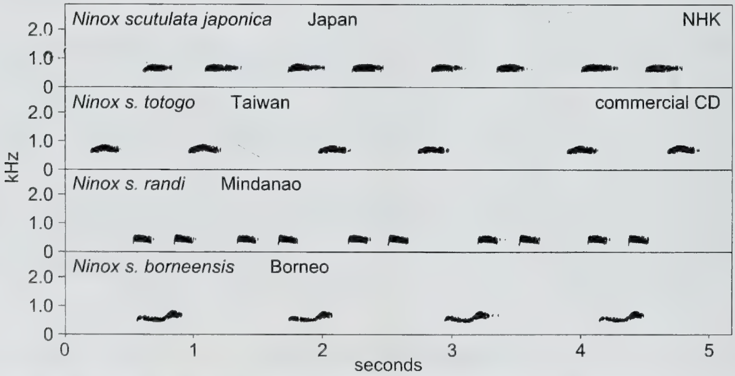

Figure 2. Territorial songs of the *Ninox scutulata* complex, showing how the couplets of *N. s japonica*, *N. s. totogo* and *N. s. randi*, and the double notes of the southern group (see text – here represented by *N. s. borneensis*), are phrased into a continuous series. The couplets of *N. s. totogo* are farther apart than those of *N. s. japonica* while those of *randi* are closer. Similarly, the two notes of the couplets of *N. j. totogo* are farther apart than those of *N. s. japonica*, while closer in *N. s. randi*. The notes of *N. s. randi* fall in pitch, as opposed to the slightly arched notes of *N. s. japonica*. The two notes of the southern group are coalesced into a double note, with the second note higher-pitched. The time scale is stretched a little over 2x that of Fig. 1.

TABLE 1

Comparison of length of culmen, wing and tail, and wing/tail ratios of the subspecies of the *Ninox scutulata* complex. Note the higher wing/tail ratio of *N. s. japonica*, *N. s. totogo* and *N. s. randi* compared to the eight southern races of *N. scutulata*, and the large size of *N. s. randi*. Measurements for *N. s. javanensis* from Stresemann (1928) and *N. s. palawanensis* from Ripley & Rabor (1962). S.d. = standard deviation.

	culmen (from skull) mean (range), s.d.	wing (flattened) mean (range), s.d.	tail mean (range), s.d.	wing/tail ratio mean (range)
N. s. japonica	23.8(21.1-26.1)	220.8(214-226.8)	115.8(107.5-122.6)	1.91 (1.75-2.03)
11 specimens	1.5	4.6	4.0	
N. s. totogo	24.8(24.3-25.2)	210.4(203.7-222.8)	115.3(111.3-120.2)	1.83 (1.73-1.99)
7 specimens	0.3	6.7	3.2	
N. s. randi	26.8 (24.6-29.1)	229.1(225.0-234.0)	122.2(118.0-125.0)	1.88 (1.85-1.91)
5 specimens	1.9	3.2	2.8	
N. s. burmanica	24.4(23.1-26.0)	218.1(201.6-226.5)	129.5(117.0-136.0)	1.68 (1.63-1.72)
10 specimens	1.0	7.5	5.7	
N. s. lugubris	24.2 (22.4-25.8)	218.3(212.0-223.7)	128.0(123.0-130.1)	1.70 (1.68-1.73)
4 specimens	1.4	4.8	3.3	
N. s. hirsuta	22.9 (19.7-24.5)	196.7(189.8-201.1)	111.8(108.7-114.9)	1.75 (1.71-1.82)
6 specimens	1.7	4.6	2.2	
N. s. obscura	24.2(22.7-25.8)	209.0(205.2-211.1)	117.3(110.4-124.2)	1.78 (1.69-1.86)
4 specimens	1.3	2.6	5.8	
N. s. scutulata	23.8(20.7-25.2)	195.7(182.4-213.3)	109.5(100.3-115.0)	1.78 (1.69-1.87)
11 specimens	1.4	7.2	4.5	
N. s. borneensis	23.1(21.9-24.4)	181.7(175.1-189.0)	101.1(95.1-109.3)	1.79 (1.69-1.91)
9 specimens	0.8	5.0	4.3	
N. s. javanensis	___	178-183	___	___
N. s. palawanensis	23.5	195	108	___

Resident *N. s. randi* of the Philippines is a large bird with a wing/tail ratio similar to *N. s. japonica*, but with a rounded wing like the southern group. *N. s. randi* is much larger than *N. s. palawanensis*, of Palawan.

In the field, in its wintering range, non-vocalizing *N. s. japonica* is probably indistinguishable from resident forms of the southern group with which it overlaps and from *N. s. randi*. In the hand, *japonica* can be distinguished from the subspecies

TABLE 2

Comparison of wing formula of *Ninox s. randi, N. s. japonica* and *N. s. totogo*, and six of the eight remaining subspecies of *Ninox scutulata* (specimens of *N. s. javanensis* and *N. s. palawanensis* were unavailable for comparison). Note the more pointed wings of *N. s. japonica* and *N. s. totogo* than both *N. s. randi* and the other *N. scutulata* ssp. The wings of resident *N. s. totogo* are nearly as pointed as migratory *N. s. japonica.*

	Longest primary	Second longest primary—mean distance from tip (range)	Third longest primary—mean distance from tip (range)	Fourth longest primary—mean distance from tip (range)	Fifth longest primary—mean distance from tip (range)
N. s. randi 3 specimens	8=7	7=8 1.2 (0.0-1.8)	6 8 (6.1-10.0)	9 19.5(15.5-22.2)	5 33.3(32.3-34.9)
N. s. totogo 6 specimens	8 (7 once)	7 (8 once) 1.6 (0.6-3.0)	9 (6 twice) 12.9 (8.6-17.2)	6 (9 twice) 17.7(15.3-19.3)	5 42.3(34.2-47.1)
N. s. japonica 11 specimens	8 (7 once)	7 (8 once) 3.9 (0.6-9.9)	9 (6 four times) 15.6(13.2-20.6)	6(9 four times) 19.6(15.4-22.8)	5 46.1(40.6-50.5)
N. s. burmanica 7 specimens	8 (7 twice)	7 (8 twice) 2.2 (0.0-8.1)	6 (9 once) 6.9 (2.6-11.0)	9 (6 once) 20.0(13.7-26.8)	5 30.4(25.3-46.2)
N. s. lugubris 3 specimens	8 (7 once)	7 (8 once) 2.0 (0.5-4.2)	6 6.9 (5.0-9.5)	9 19.2(14.6-22.0)	5 28.9(27.7-30.4)
N. s. hirsuta 5 specimens	7 (8 once)	8 (6 twice, 7 once) 1.9 (1.3-2.9)	6 (8 twice) 6.3 (4.6-8.0)	9 (5 twice) 16.6(12.5-20.0)	5(9 twice) 24.4(20.7-28.4)
N. s. obscura 3 specimens	7	8 1.8 (0.3-3.2)	6 6.4(5.6-7.7)	9 14.5(13.0-15.9)	5 28.9(26.2-32.7)
N. s. scutulata 10 specimens	7 (8 once)	8 (6 twice, 7 once) 1.6 (0.5-2.4)	6 (8 twice) 5.3(2.7-11.2)	9 (5 twice) 16.7(11.2-22.3)	5 (9 twice) 23.3(15.7-41.1)
N. s. borneensis 8 specimens	7 (8 twice)	8 (6 twice,7 twice) 1.5 (0.3-3.3)	6 (8 twice) 3.5(2.2-6.1)	9 (5 thrice) 14.2(11.4-17.1)	5 (9 thrice) 19.5(15.2-28.6)

in the southern group by its higher wing/tail ratio and more pointed wing; and from *N. s. randi* by its somewhat shorter culmen and more pointed wing.

Discussion

The territorial song of the two northern subspecies is clearly and consistently distinct (Figs. 1, 2 and 3) from those of all the southern resident subspecies of *N. scutulata.* I therefore propose that the northern forms should be regarded as a different species,

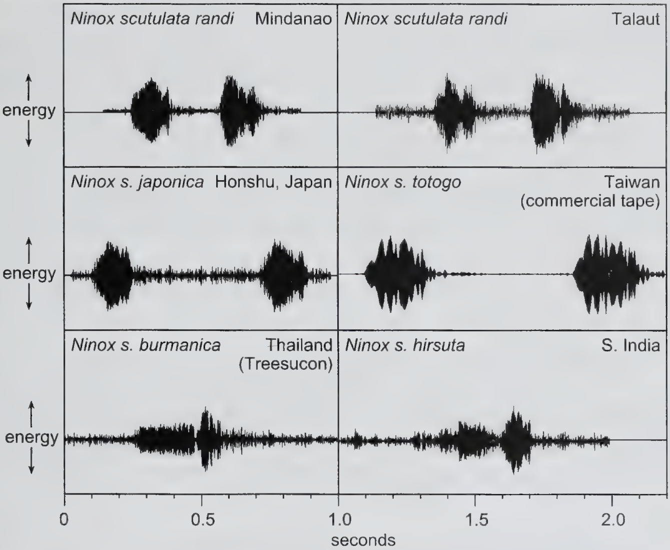

Figure 3. Wave form sonograms showing the bursts of energy associated with the two-noted territorial songs of the *Ninox scutulata* complex, clearly indicating the two widely spaced single notes of *N. s. japonica*, *N. s. totogo* and *N. s. randi,* and the two closely spaced notes of the double note of the southern subspecies of *N. scutulata* (here represented by *N. s. burmanica* and *N. s. hirsuta*).

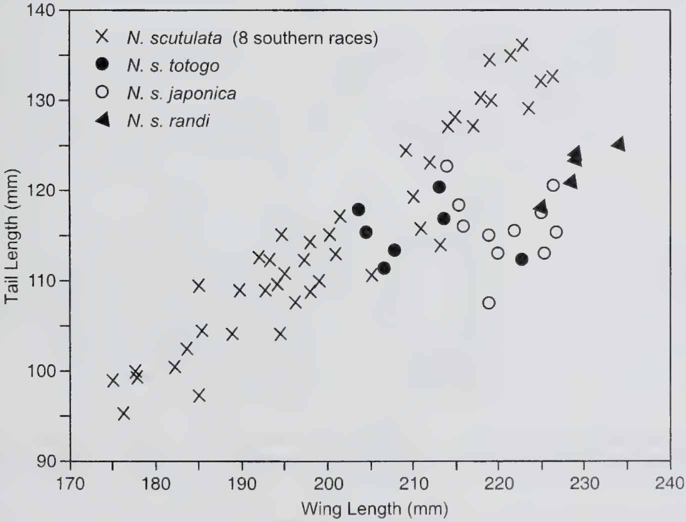

Figure 4. Scatter plot of wing length against tail length of the eight subspecies (herein combined) of the southern group of *N. scutulata* compared to those of *N. s. japonica, N. s. totogo* and *N. s. randi.* The southern group of *N. scutulata* shows a clear linear pattern of wing/tail proportion throughout its range, while *randi* and most *N. s. japonica* cluster outside the southern group, and most *N. s. totogo* cluster within it.

N. japonica, from the southern subspecies of *N. scutulata*. The more pointed wing (Table 2), proportionately shorter tail (Table 1, Fig. 4), and the higher wing/tail ratio of *N. japonica* relative to that of all forms of *N. scutulata* provide additional support for the treatment of *N. japonica* as a distinct species. Interestingly, resident *N. j. totogo* of the northern group has a pointed wing similar to migratory *N. j. japonica*.

The Philippine subspecies' territorial song, large size, proportionately short tail and high wing/tail ratio suggest a closer relationship to *japonica* than *scutulata*. However, the clearly different song indicates that it too is a separate species, *N. randi*.

I recommend Northern Boobook as the English name for *N. japonica,* Brown Boobook for *N. scutulata*, and Chocolate Boobook for *N. randi*. In my view, "boobook" is to be preferred over "hawk-owl" for all the small *Ninox* owls, as they do not look at all like hawks. While they lack conspicuous facial discs, they have large rounded heads, large forward looking eyes and short tails, making them owl-like indeed. Usage of the term boobook, instead of hawk-owl for the *Ninox* owls so named, also removes conflict with the English name for *Surnia ulula,* the Hawk Owl.

While *N. j. totogo* is clearly close to *N. j. japonica*, it is apparently resident (rather than migratory), the notes in its territorial couplet are more widely spaced and its measurements are somewhat different. These differences suggest the possibility that it may be specifically distinct but further study is required.

Peters (1940), Vaurie (1965) and König *et al.* (1999) showed the breeding range of *N. j. japonica* in China confined to northeastern or eastern China, while Cheng (1987) illustrated it extending to central Sichuan. In June 2002 I heard one *c.* 50 km north-west of Chengdu and Per Alström and Craig Robson (Fig. 1) obtained tape recordings from Emei Shan, all in central Sichuan. Further field work is needed to define more clearly the southern extent of the breeding range of *N. japonica* and the northern extent of the breeding range of *N. s. burmanica* in southern China.

On 2 September 1997, I tape-recorded *N. randi* (Fig. 1) on Karakelong Island (about midway between Mindanao and Halmahera) in the Talaut group of Indonesia. I also observed the bird in the beam of a powerful flashlight with 10x binoculars. Its appearance was that of *N. randi* and its territorial song identical to those recorded on Mindanao. This is the first record of this form for Indonesia. *N. japonica* has been recorded on Talaut (White & Bruce 1986) but its territorial song is different (Fig. 1), it apparently does not vocalize on its wintering grounds, and it is unlikely to be present until late September or October.

While the territorial song of *N. s. obscura* is similar to those of the other subspecies of *N. scutulata*, its mostly blackish underparts indicate a need for further study.

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Deepal Warakagoda provided tape recordings. The Thailand recording of *N. s. burmanica* was taken from a cassette self-published by Uthai Treesucon published in 1983 as "*The forest night sounds*"; Nepal *N. s. lugubris* from a single cassette by Scott Connop titled "*Birdsongs of Nepal*", published by the Cornell Laboratory of Ornithology in 1993; Korean *N. j. japonica* by Kim Hyun-tae from his website: <soback.kornet.net1~pintail>; *N. j. japonica* from a 3-cassette collection titled "*Japanese birds in sound, 100 well-known species*" published in 1971 by NHK TV in Japan; *N .j. japonica* by Tsuruhiko Kabaya from a 6-CD collection titled "*The songs and calls of 420 birds in Japan*" published in 2001 by Shogakukan, Tokyo; *N. j. totogo* from "*Guide to natural sounds of Taiwan forests*", published by Wind Records in Taipei. All the unattributed recordings were made by Ben King and will eventually be deposited at the Macaulay Library of Natural Sounds at the Cornell Laboratory of Ornithology. Referee Pamela Rasmussen provided much useful critique. All measured specimens are housed at the American Museum of Natural History, New York.

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The grammatical gender of avian genera

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In a recent article (David & Gosselin 2002), we have identified a number of inconsistencies in the current application of gender agreement rules to avian species-group names. In order to resolve the various issues it was indispensable for us to know the correct grammatical gender of most avian genera. It became obvious, at that point, that some of the inconsistencies that existed at the species level had their equivalent at the genus level.

The problems generally stem from the fact that some 19th-Century practices have not been comprehensively revised when the International Code of Zoological Nomenclature has, over the years (ICZN 1961, 1985, 1999), refined the ways of ascertaining the grammatical gender of generic names. Each section of the following text refers to a specific article of the ICZN Code (1999), and draws attention to the problematic genera. The Appendix lists the adjectival species-group names that must be modified in order to agree in gender with the genera in question, and also lists certain invariable words that might be confused with adjectival names. Unless stated otherwise, the authorship of each of the genera treated here is as given by Peters (1934-1986), and each citation has been verified in the original publication.

Names formed from Latin or Greek words

1) Latin words of fixed gender

A name that is or ends in an ancient or mediaeval Latin word takes the gender given for that word in standard Latin dictionaries; if it is a compound word, the gender is given by the final component: in the case of a noun, the gender of that noun; in the case of any other component, such as a Latin suffix, the gender appropriate to that component (ICZN 1999: Art. 30.1.1, Glossary: Latin). Latin definitions and grammatical genders are taken from Glare (1982), Internationale Thesaurus-Kommission (1900-1993), and Lewis & Short (1879). Examples of names that are Latin words of fixed gender include *Satrapa* [masculine], *Grus* [feminine], *Falco* [masculine], and *Hirundo* [feminine]. Therefore:

Bleda Bonaparte, 1857, is the name of Attila's brother, and is thus masculine (as is *Attila* Lesson, 1830).

Colonia Gray, 1827, is the feminine Latin noun *colonia* [colonist], and is thus feminine. Even if viewed as formed from the Spanish word "colon" (Jobling 1991), *Colonia* would also be feminine because it ends in *a* and has only the noun *colonus* as its originally included nominal species (ICZN 1999: Art. 30.2.4; see Section 10, below).

Emblema Gould, 1842, is a neuter noun [= mosaic] in both Latin and Greek, and is thus neuter [as already noted by Sibley & Monroe (1990)].

Lagopus Brisson, 1760, is the feminine Latin noun *lagopus* [white grouse], and is thus feminine. Brisson himself consistently used feminine adjectives in combination with *Lagopus*.

Milvago Spix, 1824, is either the masculine noun *milvus* [kite] or the feminine noun *milva* [she-kite], to which was added the feminine Latin suffix *ago* [a tendency] (Ernout 1941, Glare 1982), and it is thus feminine (as is *Gallinago* Brisson, 1760).

Nigrita Strickland in Fraser, 1843, is the masculine Latin noun *Nigrita* [an inhabitant of the shores of the Nigris River], and is thus masculine (as is *Pseudonigrita* Reichenow, 1903). *Nigrita* is a replacement name for *Aethiops* Strickland, 1841, a Latin word that has the same meaning and the same gender as *Nigrita.*

2) Transliterated Greek words of fixed gender

A name that is or ends in an ancient Greek word transliterated into Latin without other changes takes the gender given for that word in standard Greek dictionaries (ICZN 1999: Art. 30.1.2, Glossary: Greek). Greek definitions and grammatical genders are taken from Liddell & Scott (1996). Examples of Greek words transliterated into Latin include *Leptopogon* (from πωγων [pogon: beard], masculine), *Petrochelidon* (from χελιδων [chelidon: swallow], feminine), and *Crossoptilon* (from πτιλον [ptilon: feather], neuter). It must be noted that both the Latin letters "k" [as in *Knipolegus*] and "c" [as in *Calidris*] are considered as valid transliterations of the Greek letter κ [kappa], while both the letters "u" [as in *Trugon*] and "y" [as in *Geotrygon*] are valid transliterations of the Greek letter υ [upsilon] (ICZN 1999: Art. 11.2; Woods 1944: 10; Stearn 1966: 262; etc.); this practice conforms to the general usage in scientific nomenclature, and to numerous examples put forward by the ICZN (1999: e.g. Art. 30.1.3). Therefore:

Aglaeactis Gould, 1848, ends in the feminine noun ακτις [aktis: ray], and is thus feminine.

Ampelion Tschudi, 1846, is the masculine noun αμπελιων [ampelion: a songbird], and is thus masculine.

Cyclarhis Swainson, 1824, and ***Siphonorhis*** Sclater, 1861, end in the feminine noun ρις [rhis: nose], and are thus feminine.

Eriocnemis Reichenbach, 1849, ends in the feminine noun κνημις [knemis: legging], and is thus feminine (as is *Hypocnemis* Cabanis, 1847).

Geotrygon Gosse, 1847, ends in the feminine noun τρυγων [trugon: dove], and is thus feminine.

Heliactin Boie, 1831, ends in the feminine noun ακτιν [aktin: ray], a nominative variant of ακτις [aktis], and is thus feminine.

Illadopsis Heine, 1860, and ***Siptornopsis*** Cory, 1919, end in the feminine noun οψις [opsis: appearance], and are thus feminine (as are *Chloropsis* Jardine & Selby, 1827, *Thlypopsis* Cabanis, 1851, etc.).

Laniisoma Swainson, 1832, ends in the neuter noun σωμα [soma: body], and is thus neuter.

Leucopternis Kaup, 1847, ends in the masculine noun πτερνις [pternis: a hawk], and is thus masculine.

Macrodipteryx Swainson, 1837, ***Pseudocolopteryx*** Lillo, 1905, ***Spiziapteryx*** Kaup, 1852, and ***Stelgidopteryx*** Baird, 1858, end in the feminine noun πτερυξ [pterux: wing], and are thus feminine (as are *Archaeopteryx* Meyer, 1861, and *Brachypteryx* Horsfield, 1822).

Melozone Reichenbach, 1850, ends in the feminine noun ζωνη [zone: girdle], and is thus feminine.

Metopothrix Sclater & Salvin, 1866, ends in the feminine noun θριξ [thrix: hair], and is thus feminine (as is *Leiothrix* Swainson, 1832).

Myiopagis Salvin & Goodman, 1888, ends in the feminine noun παγις [pagis: snare], and is thus feminine.

Neocrex Sclater & Salvin, 1868, ends in the feminine noun κρεξ [krex: rail] and is thus feminine (as are *Crex* Bechstein, 1803, *Gallicrex* Blyth, 1852, and *Megacrex* D'Albertis & Salvadori, 1879).

Orthonyx Temminck, 1820, ends in the masculine noun ονυξ [onux: claw], and is thus masculine (as are *Certhionyx* Lesson, 1830, *Dolichonyx* Swainson, 1827, etc.).

Pachycare Gould, 1876, ends in the neuter noun καρη [kare: head], a nominative variant of καρα [kara], and is thus neuter.

Paramythia De Vis, 1892, is the feminine noun παραμυθια [paramuthia: encouragement], and is thus feminine.

Philydor Spix, 1824, ends in the neuter noun υδωρ [udor: water], and is thus neuter.

3) Greek words latinized with an ending indicative of a particular gender

Names that are Greek words latinized with change of ending, or with a Latin or latinized suffix, take the gender normally appropriate to the changed ending or the Latin suffix (ICZN 1999: Art. 30.1.3). It must be emphasized that the ICZN Code does not expressly mention the normally appropriate gender of latinized endings. The examples given under Art. 30.1.3 indicate that names that have the Latin *us* ending are masculine, while those that have the Latin *a* ending are feminine; it can be inferred that those with the *um* ending are neuter. This conforms to the prevalent gender of Latin nouns with such endings, and to the general usage in scientific nomenclature. Therefore:

Philentoma Eyton, 1845, ends in the adjective εντομος [entomos: cut in pieces] latinized with a feminine ending, and must thus be treated as feminine. If it is argued that *Philentoma* is neuter because *entoma* is also the transliterated neuter plural form of "entomos" [from τα εντομα (ζοα): ta entoma (zoa): the cut (animals): the insects], it would follow that *Philentoma* would also be plural. A genus-group name, however, "must be, or be treated as, a noun in the nominative singular" (ICZN 1999: Art. 11.8), and in that form *Philentoma* can only be feminine.

Todiramphus Lesson, 1827, ends in the noun ραμφος [ramphos: bill], latinized with a masculine ending, and is thus masculine. See Christidis & Boles (1994: 60-61) for the correct spelling of this name. Some recent authors have treated *Todiramphus* as distinct from *Halcyon*, yet none of them has made all of the required gender changes to the adjectival names.

Tricholaema J. & E. Verreaux, 1855, ends in the noun λαιμος [laimos: throat], latinized with a feminine ending, and is thus feminine [as already noted by Short & Horne (1987)].

4) Compound words ending in **ops**

All compound names ending in *ops* are mandatorily masculine, regardless of their derivation or of their treatment by their authors (ICZN 1999: Art. 30.1.4.3). In current avian literature, however, the following genera are not consistently treated as masculine: ***Creurgops*** Sclater, 1858; ***Hymenops*** Lesson, 1828; ***Jacamerops*** Lesson, 1830; ***Lophozosterops*** Hartert, 1896; ***Loxops*** Cabanis, 1847; ***Prionops*** Vieillot, 1816; ***Speirops*** Reichenbach, 1852; and ***Zosterops*** Vigors & Horsfield, 1826.

5) Compound words ending in the suffix **ites, oides, ides, odes,** ***or*** **istes**

A compound genus-group name ending in the suffix *ites, oides, ides, odes,* or *istes* is to be treated as masculine unless its author, when establishing the name, stated that it had another gender or treated it as such by combining it with an adjectival species-group name in another gender form (ICZN 1999: Art. 30.1.4.4). Therefore:

Anthropoides Vieillot, 1816, ***Aramides*** Pucheran, 1845, ***Penelopides*** Reichenbach, 1849, and ***Sypheotides*** Lesson, 1839, were not combined with species-group names when originally established, and are thus masculine.

Butorides Blyth, 1852, was first established in combination with the feminine adjective *javanica*, and is thus feminine.

Cinclodes Gray, 1840, was first established in combination with the masculine adjective *patagonicus*, and is thus masculine.

Pionites Heine, 1890, was first established in combination with the latinized masculine adjective *melanocephalus*, and is thus masculine.

Piprites Cabanis, 1847, was first established in combination with the feminine adjective *pileata*, and is thus feminine.

Saxicoloides Lesson, 1832, was first established in the combination *Turdus (Saxicoloides) erythrurus*, and is thus masculine.

Turdoides Cretzschmar, 1827, was first established in combination with the latinized feminine adjective *leucocephala*, and is thus feminine.

6) Latin words with a changed ending

A name that is or ends in a Latin word of which the ending has been changed takes the gender appropriate to the new ending. If the ending is such as not to indicate a particular gender, the name is to be treated as masculine (ICZN 1999: Art. 30.1.4.5). It must be emphasized again that the ICZN Code does not expressly mention the normally appropriate gender of Latin endings. The example given under Art. 30.1.4.5 indicates that names that have the Latin *a* ending are feminine; it can be inferred that those with the *us* ending are masculine and those with the *um* ending are neuter (see also Section 3, above). Therefore:

Andigena Gould, 1851, ends in the Latin noun *genus* [offspring] with a changed ending indicative of the feminine gender, and is thus feminine.

Garrulax Lesson, 1831, is the Latin adjective *garrulus* [garrulous] with a changed ending not indicative of a particular gender, and is thus masculine.

Procnias Illiger, 1811, is the Latin noun *Procne* [a mythical character] with a changed ending not indicative of a particular gender, and is thus masculine. If *Procnias* is considered as modified from the comparable Greek noun Προκνη [Prokne], it would also be masculine because it was not combined with a species-group name when originally established (ICZN 1999: Art. 30.1.4.2).

Tiaris Swainson, 1827, is the Latin (and Greek) noun *tiaras* or *tiara* [a Persian head-dress] with a changed ending not indicative of a particular gender, and is thus masculine. Moreover, it was originally established in combination with the masculine adjective *pusillus*.

7) Words of common or variable gender

A genus-group name that is or ends in a Latin or Greek word of common or variable gender (masculine or feminine) is to be treated as masculine unless its author, when establishing the name, stated that it is feminine or treated it as feminine in combination with an adjectival species-group name. It is important to note here that the gender of a name is indicated solely by an author's action in the work where the name is originally established (ICZN 1999: Art. 30.1, 30.1.4.2, Glossary: establish). Thus:

7a) Latin words of common or variable gender

Most classical Latin nouns that end in the substantival suffix *cola* [dweller] are masculine, but a few are feminine as well as masculine [e.g. *monticola*, *limicola* (Glare 1982)]. Thus, generic names that end in *cola* and that happen to be classical Latin words of common or variable gender, or happen to be newly derived words, are not all mandatorily masculine contrary to what Clancey (1992: 221), Dowsett & Dowsett-Lemaire (1993: 359), and Sibley & Monroe (1990: 592) have concluded; they are feminine if originally established in combination with a feminine adjectival name (Godfrey 1965). For example, *Arundinicola* d'Orbigny, 1840, originally established in combination with the latinized adjective *leucocephala*, is feminine and currently treated as such. Therefore:

Bambusicola Gould, 1863, was first established in combination with the noun phrase *sonorivox*, and is thus masculine.

Chthonicola Gould, 1847, was not combined with a species-group name when originally established, and is thus masculine. *Anthus minimus* Vigors & Horsfield was simply listed as the type species, but Christidis & Boles (1994: 64-65) argued that *Chthonicola* is feminine because Gould, elsewhere and later, used the combination *Chthonicola minima*; however, this action does not meet the requirement ("when establishing") of ICZN (1985: Art. 30 (a)(i), Glossary: establish; 1999: Art. 30.1.4.2).

Cisticola Kaup, 1829, was not combined with a species-group name when originally established, and is thus masculine.

Graminicola Jerdon, 1863, was first established in combination with *bengalensis*, an adjective not indicative of a particular gender, and is thus masculine.

Hylacola Gould, 1843, was first established in combination with the feminine adjective *cauta*, and is thus feminine [as already noted by Christidis & Boles (1994: 64)].

Muscisaxicola d'Orbigny & Lafresnaye, 1837, was first established in combination with words not indicative of a particular gender (*mentalis*, *maculirostris*, *rufivertex*, and *striaticeps*), and is thus masculine.

Pinicola Vieillot, 1807, was first established in combination with the feminine adjective *rubra*, and is thus feminine [as already noted by Godfrey (1965)].

Rupicola Brisson, 1760, was not combined with a species-group name when originally established, and is thus masculine.

Saxicola Bechstein, 1802, was first established in combination with three nouns in apposition: the Latin noun phrase *rubicola* [dweller among brambles]; the Latin noun *oenanthe* [a bird]; and the Latin noun *rubetra*, used by Gazes as the translation of Aristotle's βατις [batis: a bird] (Belon 1555; Jobling 1991). *Saxicola* is thus masculine.

Schoenicola Blyth, 1844, was not combined with a species-group name when originally established, and is thus masculine.

Dives Deppe, 1830, a Latin adjective [opulent] with identical masculine and feminine endings, was first established as a subgenus together with the type by tautonymy *Icterus dives* Deppe, 1830 (*fide* Peters 1968: 186), and is thus masculine [original not seen].

7b) Greek words of common or variable gender

The Greek adjectives δρυμωδης [drumodes: wooded, woody], ροδοπηχυς [rhodopechus: rosy-armed], τοξηρης [toxeres: armed with a bow] and τρηρων [treron: shy], and the Greek nouns χεν [chen: goose], ορτυξ [ortux: quail], παις [pais: child], περδιξ [perdix: partridge] and φυλαξ [phulax: guardian] are masculine as well as feminine (Liddell & Scott 1996). Therefore:

Ammoperdix Gould, 1851, was first established in combination with the nouns *heyi* and *bonhami*, and is thus masculine.

Caloperdix Blyth, 1861, was first established in combination with the masculine adjective *ocellatus*, and is thus masculine.

Chen Boie, 1822, and the final components of ***Alopochen*** Stejneger in Kingsley, 1885, ***Cyanochen*** Bonaparte, 1856, and ***Neochen*** Oberholser, 1918, are the transliterated Greek noun χεν [chen: goose]. Because each of these names was first established in combination with a feminine adjective (*Chen hyperborea*, *Alopochen aegyptiaca*, *Cyanochen cyanoptera*, *Neochen jubata*), all four are feminine.

Cinnyris Cuvier, 1816, is the putative nominative singular [κιννυρις] of the nominative plural κιννυριδες [kinnurides], defined by Liddell & Scott (1996) as meaning τα μικρα ορνιθαρια [ta mikra ornitharia: the small birdlets]. Because the gender of the word is unknown, and because *Cinnyris* was not combined with a species-group name when originally established, it must be treated as masculine.

Drymodes Gould, 1840, was first established in combination with the feminine adjective *brunneopygia*, and is thus feminine. Although the meaning given by Gould for *Drymodes* ("lover of woodland places") is not fully reflected by the word he chose, the name would still be feminine even if considered as a modified Greek word [as per Jobling (1991); see Section 7c, below], or considered as ending in the suffix *-odes* (see Section 5, above).

Eutoxeres Reichenbach, 1849, ***Heliopais*** Sharpe, 1893, ***Melanoperdix*** Jerdon, 1853, ***Hylophylax*** Ridgway, 1909, ***Schoeniophylax*** Ridgway, 1909, ***Phapitreron*** Bonaparte, 1854, and ***Treron*** Vieillot, 1816, were not combined with a species-group name when originally established, and are thus masculine.

Lophortyx Bonaparte, 1838, was first established in combination with the feminine adjective *californica*, and is thus feminine.

Oreortyx Baird, 1858, was first established in combination with the masculine adjective *pictus*, and is thus masculine.

Rhodopechys Cabanis, 1851, was first established in combination with the masculine adjective *sanguineus*, and is thus masculine.

The Greek noun ορνις [ornis: bird] is and always has been masculine as well as feminine (Arndt & Gingrich 1957, Bailly 1950, Liddell & Scott 1996, etc.). Accordingly, names ending in "ornis" end in a word of common gender, and fall under Art. 30.1.4.2 of ICZN (1999). The fact that *Ichthyornis* was used as an example of Art. 30.1.2 (names that end in a Greek word of fixed gender) is obviously an oversight, of no real consequence here because examples "do not form part of the legislative text of the Code" (ICZN 1999: Art. 89.2). Generic names ending in "ornis" are masculine unless combined with a feminine adjectival name when originally established. As a matter of fact, *Ichthyornis* Marsh, 1872, is masculine because it was first established in combination with *dispar*, an adjective not indicative of a particular gender. *Anthornis* Gray, 1840, and *Torreornis* Barbour & Peters, 1927, originally established in combination with feminine adjectives, are currently treated as feminine. Therefore:

Basilornis Bonaparte, 1851, ***Chlorornis*** Reichenbach, 1850, ***Lophornis*** Lesson, 1829, ***Mesitornis*** Bonaparte, 1855, ***Nyctyornis*** Jardine & Selby, 1830, and ***Rhopornis*** Richmond, 1902, were not combined with a species-group name when originally established, and are thus masculine.

Acanthornis Legge, 1887, was first established in combination with the feminine adjective *magna*, and is thus feminine.

Agapornis Selby, 1836, was first established in combination with the masculine adjective *swinderianus*, and is thus masculine.

Agriornis Gould, 1839, was first established in combination with the latinized masculine adjectives *leucurus* and *micropterus*, and is thus masculine.

Amaurornis Reichenbach, 1853, was first established in combination with the feminine adjective *olivacea*, and is thus feminine.

Amblyornis Elliot, 1872, was first established in combination with the feminine adjective *inornata*, and is thus feminine.

Carpornis Gray, 1846, was first established in combination with the feminine adjectives *arcuata*, *cucullata*, *melanocephala*, *nigra*, and *rubrocristata*, and is thus feminine.

Casiornis Des Murs, 1856, was first established in combination with the noun *typus*, and is thus masculine.

Chaetornis Gray, 1848, was first established in combination with the feminine adjective *striata*, and is thus feminine.

Cyornis Blyth, 1843, was first established in combination with words not indicative of a particular gender (*banyumas*, *tickelliae*, *unicolor*, and *rubeculoides*), and is thus masculine.

Iridosornis Lesson, 1844, was first established in combination with the noun phrase *rufivertex* (*fide* Ménégaux 1913), and is thus masculine.

Lampornis Swainson, 1827, was first established in combination with the masculine adjective *amethystinus*, and is thus masculine.

Machetornis Gray, 1841, was first established in combination with the feminine adjective *rixosa*, and is thus feminine.

Rhyacornis Blandford, 1872, was first established in combination with the feminine adjective *fuliginosa*, and is thus feminine.

Sayornis Bonaparte, 1854, was first established in combination with an adjective not indicative of a particular gender (*nigricans*, the type by monotypy), and is thus masculine [original not seen].

Schiffornis Bonaparte, 1854, was first established in combination with words not indicative of a particular gender (*major* and *minor*), and with the feminine adjective *turdina*, and is thus feminine.

Tigriornis Sharpe, 1895, was first established in combination with the latinized feminine adjective *leucolopha*, and is thus feminine.

Many generic names ending in *es* are Greek words formed from verb stems. Some are classical Greek nouns of fixed gender (e.g. the masculine *Threnetes*, θρηνητης, from θρηνεω [threneo: to lament]), while others are classical adjectives that have identical masculine and feminine endings (e.g. *Oxylabes*, οξυλαβης, from λαμβανω [lambano: to take]). Other generic names ending in *es,* however, are words that are newly derived from Greek verb stems; for example, *Chersomanes* and *Thamnomanes,* from μαινομαι [mainomai: to rave], were created on the model of classical adjectives such as ορνιθομανης [ornithomanes: mad for birds] and υλομανης [hulomanes: mad for woods]. Such derived names are not Greek words of fixed gender transliterated into Latin without other changes (ICZN 1999: Art. 30.1.2). They must thus be treated as words of common gender (Art. 30.1, 30.1.4.2). *Chersomanes* Cabanis, 1851, is thus feminine because it was first established in combination with feminine adjectives, while *Thamnomanes* Cabanis, 1847, is masculine because it was first established in combination with masculine adjectives. Therefore:

Ammomanes Cabanis, 1851, derived from μαινομαι [mainomai: to rave], was first established in combination with the noun *deserti* (in the text), and with the feminine adjective *pallida* (in a footnote), and is thus feminine.

Augastes Gould, 1849, derived from αυγαζω [augazo: to appear bright], was first established in combination with "*Lumachellus*" [= *Ornismya lumachella* Lesson, 1838] and with the masculine adjective *scutatus*, and is thus masculine. Note that

Lesson's *lumachella* is an Italian word (Jobling 1991), and is thus indeclinable (ICZN 1999: Art. 31.2.3).

Cormobates Mathews, 1922, derived from βαινω [baino: to walk], was first established in combination with the feminine adjectives *leucophaea* and *superciliosa*, and is thus feminine.

Iridophanes Ridgway, 1901, derived from φαινω [phaino: to bring to light], was not combined with a species-group name when originally established, and is thus masculine.

Lymnocryptes Kaup, 1829, derived from κρυπτω [krupto: to hide], was not combined with a species-group name when originally established, and is thus masculine.

7c) Greek words with a modified or latinized ending not indicative of a particular gender

Several generic names are formed from Greek words, but with a changed ending. For example, *Crateroscelis* and *Erythrogonys* end respectively in the neuter nouns σκελος [skelos: leg] and γονυ [gonu: knee], with a changed ending. Such names are not Greek words of fixed gender transliterated into Latin without other changes (ICZN 1999: Art. 30.1.2). They must thus be treated as words of common gender (Art. 30.1.4.2) because ICZN (1999) does not otherwise consider the gender of modified Greek endings. It is to be be remembered here that a scientific name "must be, or be treated as, a noun in the nominative singular" (ICZN 1999: Art. 11.8).

Even if viewed as latinized Greek words with a changed ending that, contrary to *us*, *a*, *um*, is not indicative of a particular gender (Art. 30.1.3 Examples), names such as *Crateroscelis* and *Erythrogonys* would also have to be considered as words of common or variable gender (Art. 30.1.4.2). *Crateroscelis* Sharpe, 1883, is thus feminine because it was first established in combination with feminine adjectives, while *Erythrogonys* Gould, 1838, is masculine because it was first established in combination with masculine adjectives. Although these names are not arbitrary combinations of letters because they are clearly formed on the correct stems of Greek words (ICZN 1999: Art. 30.1), but with a change of ending, treating them as arbitrary combinations of letters (Art. 11.3, 30.2) would not alter the following conclusions. Therefore:

Acropternis Cabanis & Heine, 1859, from πτερνη or πτερνα [pterne or pterna: ankle], with a changed ending, was first established in combination with the noun phrase *orthonyx*, and is thus masculine.

Actitis Illiger, 1811, from ακτιτης [aktites: coast dweller], with a changed ending, was not combined with a species-group name when originally established, and is thus masculine.

Chionis Forster, 1788, from χιων [chion: snow], with a changed ending, was not combined with a species-group name when originally established, and is thus masculine.

Climacteris Temminck, 1820, from κλιμακτηρ [klimacter: rung of a ladder], with a changed ending, was not combined with a species-group name when originally established, and is thus masculine.

Cissopis Vieillot, 1816, from ωψ (genitive ωπος) [ops, opos: face], but with a changed ending, was not combined with a species-group name when originally established, and is thus masculine.

Corythopis Sundevall, 1836, from ωψ [ops: face] or οψις [opsis: appearance], but with a changed ending, was apparently not combined with a species-group name when originally established, and is thus masculine [original not seen]. Note: we have failed to find *Corythopis* in a name combination quoted from Sundevall.

Diglossopis Sclater, 1856, from ωψ [ops: face] or οψις [opsis: appearance], but with a changed ending, was first established in combination with *caerulescens*, an adjective not indicative of a particular gender, and is thus masculine.

Glaucis Boie, 1831, from γλαυκος [glaukos: gleaming], with a changed ending, was not combined with a species-group name when originally established, and is thus masculine.

Heliolais Sharpe, 1903, from λαιος [laios: a thrush] (Richmond 1909), but with a changed ending, was first established in combination with *kemoensis*, an adjective not indicative of a particular gender, and is thus masculine. Although the Greek nouns επιλαις [epilais] and υπολαις [hupolais] also designate a small passerine, there is no such word as "lais" ["λαις"] in ancient Greek.

Urolais Alexander, 1903, from λαιος [laios: a thrush] (Richmond 1909), but with a changed ending, was first established in combination with the noun *mariae*, and is thus masculine. See *Heliolais*, above.

Pygoscelis Wagler, 1832, from σχελος [skelos: leg], with a changed ending, was not combined with a species-group name when originally established, and is thus masculine.

Xanthotis Reichenbach, 1852, from ους (genitive ωτος) [ous, otos: ear], but with a changed ending, was first established in combination with *flaviventris*, an adjective not indicative of a particular gender, and is thus masculine. This name (as well as *Melanotis* Bonaparte, 1850, and *Euptilotis* Gould, 1858) should not be confused with names ending in the feminine Greek (and Latin) noun ωτις [*otis*: bustard] (Jobling 1991, Pritchard 1994).

Callaeas Forster, 1778, from καλλαιον [kallaion: wattle], with a changed ending and with the inclusion of the latinized "*ae*" spelling, was not combined with a species-group name when originally established, and is thus masculine.

Conopias Cabanis & Heine, 1859, from κωνωψ (genitive κωνωπος) [konops, konopos: gnat], but with a changed ending, was first established in combination with the masculine adjective *superciliosus*, and is thus masculine.

Lochmias Swainson, 1827, from λοχμιος [lochmios: of the coppice], with a changed ending, was not combined with a species-group name when originally established, and is thus masculine.

Microrhopias Sclater, 1862, from ρωψ (genitive ρωπος) [rhops, rhopos: bush], but with a changed ending, was not combined with a species-group name when originally established, and is thus masculine.

Anthreptes Swainson, 1832, from θρεπτηρ [threpter: feeder, rearer], but with a changed ending, was not combined with a species-group name when originally established, and is thus masculine.

Ceryle Boie, 1828, from κηρυλος [kerulos: a sea-bird], with a changed ending, was not combined with a species-group name when originally established, and is thus masculine. *Chloroceryle* Kaup, 1848, and *Megaceryle* Kaup, 1848, however, were established in combination with feminine adjectival names, and are feminine.

Eremopterix Kaup, 1836, from πτερυξ [pterux: wing], but with a changed ending, was not combined with a species-group name when originally established, and is thus masculine. Whereas the ending *pteryx* (as in *Archaeopteryx*, etc.; see Section 2, above) is the transliteration of πτερυξ [pterux], the ending *pterix* is not, because the Latin "i" represents the Greek ι [iota], not the Greek υ [upsilon: u or y] (ICZN 1985: Appendix B).

Eudynamys Vigors & Horsfield, 1826, from δυναμις [dunamis: force], but with a changed ending, was first established in combination with words not indicative of a particular gender (*orientalis* and *flindersii*), and is thus masculine. Whereas *dynamis* (as in *Microdynamis* Salvadori, 1878) is the transliteration of δυναμις [dunamis], *dynamys* is not, because the Latin "y" represents the Greek υ [upsilon: u], not the Greek ι [iota: i] (ICZN 1985: Appendix B).

There is no such word as "myias" or "muias" ["μυιας"] in classical Greek. Cabanis (1850), when he established *Eumyias*, stated that it was formed from μυια [muia: fly], and Cabanis & Heine (1859), when they established *Phyllomyias,* noted that it was formed from "μυιας (= *muscicapa*)". In other words, *myias* is the Greek word μυια [muia: fly] with a new ending to convey a new meaning [flycatcher]. For undisclosed reasons, Watson [in Peters (1986: 311, footnote)] stated that *Rhinomyias* is a feminine noun of Greek origin (but he nonetheless used it in combination with the masculine adjective *subsolanus*). In fact, names ending in *myias* are currently treated in a rather haphazard manner. *Eumyias* was first established in combination with *indigo*, a word not indicative of a particular gender, while *Pyrrhomyias* was first established in combination with the masculine adjective *cinnamomeus*, yet both are now generally treated as feminine; *Rhinomyias* is currently combined with one masculine and several feminine adjectives; *Phaeomyias* and *Uromyias* are currently treated as feminine, while *Phyllomyias* and *Tolmomyias* are treated as masculine.

The word *myias* can only be viewed as the Greek noun μυια [muia], with a new ending not indicative of a particular gender. Names that end in *myias* must thus be treated as words of common gender (ICZN 1999: Art. 30.1, 30.1.3, 30.1.4.2). Therefore:

Eumyias Cabanis, 1850, was first established in combination with *indigo*, a word not indicative of a particular gender, and is thus masculine.

Heteromyias Sharpe, 1879, was first established in combination with the noun phrase *cinereifrons*, and is thus masculine.

Pyrrhomyias Cabanis & Heine, 1859, was first established in combination with the noun *heinei* and the masculine adjective *cinnamomeus*, and is thus masculine.

Rhinomyias Sharpe, 1879, was first established in combination with the noun phrase *ruficauda* and the adjective *pectoralis*, not indicative of a particular gender, and is thus masculine.

Names formed from words that are neither Latin nor Greek

In addition to words originating from languages other than Latin and Greek, the present category includes modified classical words, such as *Dacelo*, from *Alcedo* (ICZN 1999: Art. 30.2.4 Examples). Therefore, classical words with a modified stem (as opposed to a modified ending) belong here. Unless stated otherwise, the etymology of the following names is as given by Jobling (1991).

8) Nouns from modern European languages

A name that reproduces exactly a noun having a gender in a modern European language takes the gender of that noun (ICZN 1999: Art. 30.2.1). For example, *Remiz* Jarocki, 1819, is masculine because it is the masculine Polish noun "remiz", while *Fregata* Lacépède, 1799, and *Porzana* Vieillot, 1816, are respectively the feminine Italian nouns "fregata" and "porzana". Therefore:

Ara Lacépède, 1799, is the masculine French noun "ara", attested since 1558 (Robert 1985), and is thus masculine. Even if only the Tupi Indian etymology is considered, *Ara* would also be masculine as it would then fall under Art. 30.2.3 (ICZN 1999). Because Lacépède did not include species when he established the genus *Ara* (*fide* Daudin 1800, Desmarest 1826, Sherborn 1899), its gender would then be indicated by the name combinations of the first subsequently included nominal species (ICZN 1999: Art. 30.2.3, 67.2.2), and as Daudin (*in* Buffon 1802: 198-199) combined *Ara* with the masculine adjectives *severus* and *ater* (the only adjectives among the originally included nominal species), *Ara* would then be masculine.

Tchagra Lesson, 1831, is the masculine French noun "tchagra", attested since 1797 (Jobling 1991, Larousse 1866-1876), and is thus masculine.

Turnix Bonnaterre, 1791, is the masculine French noun "turnix", attested since 1770 (e.g. Robert 1985), and is thus masculine. Moreover, *Turnix* was first established in combination with the masculine adjective *africanus*.

9) Names of which the gender was indicated by their combination with an adjectival name

If the gender of a name was not expressly specified by its author, the name takes the gender indicated by its combination with one or more adjectival species-group names of the originally included nominal species (ICZN 1999: Art. 30.2.3, 67.2). For example, *Jabiru* Hellmayr, 1906, is feminine because it was established in combination with the latinized feminine adjective *mycteria*, while *Philippinia* Hachisuka, 1941, is masculine because it was established in combination with the masculine adjective *primigenius*. Therefore:

Aplonis Gould, 1836, an arbitrary combination of letters from απλοος [aploos: simple] and ορνις [ornis: bird] (Bruce & McAllan 1990), was first established in combination with the feminine adjectives *fusca* and *marginata*, and is thus feminine.

Brachypteracias Lafresnaye, 1834, an arbitrary combination of letters from *brachypterus* and *Coracias*, was first established in combination with a word not indicative of a particular gender (*pittoides*), and with the latinized masculine adjective *leptosomus*, and is thus masculine.

Chlorestes Reichenbach, 1854, an arbitrary combination of letters from χλωρος [chloros: green] and εσθης [esthes: dress], was first established in combination with several words not indicative of a particular gender, and with the feminine adjectives *coerulea*, *prasina*, and *nitidissima*, and is thus feminine. Whereas *esthes* (as in *Amauresthes* Reichenbach, 1862, and *Lemuresthes* Wolters, 1949) is the transliteration of εσθης [esthes], *estes* is not, because the Latin "t" represents the Greek τ [tau], not the Greek θ [theta: th] (ICZN 1985: Appendix B). Note, however, that εσθης [esthes: dress], too, is a feminine noun.

Foulehaio Reichenbach, 1852, from the Tongan native name "foulehaoi", was first established in combination with the masculine adjective *musicus*, and is thus masculine.

Peneothello Mathews, 1920, an arbitrary combination of the Latin adverb *pene* [almost] and the name of a Shakespearian character (Othello), does not reproduce "exactly" a noun having a gender in a modern European language (ICZN 1999, Art. 30.2.1). Mathews (1920) used the combination *Peneothello sigillata* in the index of his work, thus establishing the name as feminine.

10) Names of which the gender was neither specified nor indicated

If the gender of a name was neither expressly specified by its author, nor indicated by a combination with adjectival names of the originally included nominal species, the name is to be treated as masculine, except that, if it ends in *a* the gender is feminine, and if it ends in *um*, *on*, or *u*, the gender is neuter (ICZN 1999: Art. 30.2.4). Therefore:

Aratinga Spix, 1824, formed from the Tupi Indian word "arucatinga", was first established in combination with several masculine Latin adjectives, including *aureus* and *luteus*, and with the feminine geographical adjective *caixana*. The gender is thus not clearly indicated by the author, and *Aratinga* must be treated as feminine because it ends in *a*.

Certhiaxis Lesson, 1844, arbitrarily formed from *Certhia* and *Synallaxis*, was not combined by Lesson with the originally included nominal species (*fide* Ménégaux 1913), and is thus masculine.

Chlidonias Rafinesque, 1822, arbitrarily formed from χελιδων [chelidon: swallow] or χελιδονιος [chelidonios: swallow-like], is masculine whether or not it was originally combined with the noun phrase *melanops*, the type by monotypy [original not seen].

Delichon Horsfield & Moore, 1854, an anagram of *Chelidon*, was first established in combination with *nipalensis*, an adjective not indicative of a particular gender, and must thus be treated as neuter because it ends in *on*. It may be argued that masculine and feminine are the only options allowed by the adjective *nipalensis*, but in that case *Delichon* would be masculine, and certainly not feminine as currently treated. However, Articles 30.2.3 and 30.2.4 (ICZN 1999) are clear: "... the name takes **the** gender indicated by its combination with one or more adjectival species-group names ... (30.2.3). If no gender was ... indicated, the name is to be treated as masculine, except that, if the name ends in ...-on, ... the gender is neuter" (30.2.4).

Gymnopithys Bonaparte, 1857, ending in a word of unknown origin [see *Pithys*, below], was first established in combination with an adjective not indicative of a particular gender (*pectoralis*, the type by monotypy), and is thus masculine [original not seen].

Heliothryx Boie, 1831, arbitrarily formed from ηλιος [helios: sun] and θριξ [thrix: hair], was not combined by Boie with the originally included nominal species, and is thus masculine. Whereas *thrix* (as in *Leiothrix* and *Metopothrix*; see Section 2, above), is the transliterated noun θριξ [thrix], this is not the case for *thryx* because the Latin "y" represents the Greek υ [upsilon: u], not the Greek ι [iota: i] (ICZN 1985: Appendix B).

Henicopernis Gray, 1859, formed on *Pernis* Cuvier, 1816, was first established in the combination *Pernis* (*Henicopernis*) *longicauda*, and is thus masculine. The name *longicauda* is a noun phrase, not a feminine adjective. It appears that Cuvier (1816) erred when he indicated that *Pernis* is formed from the Greek "pernis" or "pernès", "a bird of prey". Such words ["περνις" or "περνης"] do not exist in Greek in the nominative singular. *Pernis* is rather an arbitrary combination of letters from the masculine noun πτερνις [pternis: a hawk] (Liddell & Scott 1996).

Ketupa Lesson, 1831, formed from the Malay word "ketupok", was first established in combination with words not indicative of a particular gender (*javensis* and *leschenaultii*), and is thus feminine because it ends in *a*.

Lewinia Gray, 1855, formed from the name of J.W. Lewin, has the noun *lewini* as its only originally included nominal species, and is thus feminine because it ends in *a*.

Mitu Lesson, 1831, from the Tupi Indian word "mitu", was not combined by Lesson with the originally included nominal species, and is thus neuter because it ends in *u*.

Northiella Mathews, 1912, formed from the name of A.J. North, has the noun phrase *haematogaster* as its only originally included nominal species, and is thus feminine because it ends in *a*.

Phylidonyris Lesson, 1831, arbitrarily formed from the French noun "phylédon" and the Greek noun κιννυρις [kinnuris], was not combined by Lesson with the originally included nominal species, and is thus masculine.

Pithys Vieillot, 1818, a word of unknown origin, was first established in combination with the noun phrase *leucops*, and is thus masculine. Even if viewed as an arbitrary combination of letters from Greek words such as Πυτις [Putis: a nymph] or Πυθις [Puthis: daughter of Delphos (Grimal 1982)], *Pithys* would also be masculine.

Ramphotrigon Gray, 1855, arbitrarily formed from ραμφος [ramphos: bill] and τριγωνος [trigonos: triangular] or τριγωνον [trigonon: triangle, triangular], has "*Pl. ruficaudus*" [= *Platyrhynchus ruficauda* Spix, 1825] as its only originally included nominal species, and is thus neuter because it ends in *on*. Note that "*ruficaudus*" is not an adjective, but an erroneously modified noun phrase.

Seleucidis Lesson, 1835, arbitrarily formed from the French noun "séleucide", as specified by Lesson (1835), was first established in combination with the adjective *acanthilis*, not indicative of a particular gender, and is thus masculine. Even if viewed as originating from the Greek noun σελευκις [seleukis: a bird] or the Latin noun *seleucis* [a bird], but with a changed ending, *Seleucidis* would also be masculine (ICZN 1999: Art. 30.1.4.2, 30.1.4.5; see Section 7c, above).

Touit Gray, 1855, formed from the Tupi Indian word "tuiete", has the noun *hueti* as its only originally included nominal species, and is thus masculine.

Xolmis Boie, 1826, a word of unknown origin, was not combined by Boie with the originally included nominal species, and is thus masculine.

Names of which the gender was specifically determined by the ICZN

11) Names on the Official List of Generic Names

As explained in ICZN's Direction 26 (Hemming 1955), a name placed on the *Official List of Generic Names in Zoology* is attributed a gender as part of the ICZN ruling. These gender indications do not necessarily conform to the present Code. For example, *Aix* would be masculine, while *Threskiornis* and *Hydrobates* would be feminine according to Art. 30.1.4.2 (ICZN 1999); however, these names have been ruled to be respectively feminine [*Aix* (Hemming 1955)] and masculine [*Threskiornis* and *Hydrobates* (ICZN 1992a, 1992b)], a move in accordance with the current usage. A name or nomenclatural act entered in an *Official Index* has the status attributed to it in the relevant ruling(s) (ICZN 1999: Art. 80.2, 80.7.1), and "no ruling given by the Commission in relation to a particular work, name, or nomenclatural act is to be set aside without the consent of the Commission" (ICZN 1999: Art. 80.9). Therefore:

Coracias Linnaeus, 1758, the masculine Greek noun κορακιας [korakias: chough], is masculine as ruled by ICZN's Opinion 404 (Hemming 1956a), as well as according to Art. 30.1.2 (ICZN 1999).

Numida Linnaeus, 1766, the masculine Latin noun *Numida* [a Numidian], is masculine as ruled by ICZN's Direction 89 (Hemming 1958), as well as according to Art. 30.1.1 (ICZN 1999).

Brotogeris Vigors, 1825, modified from the Greek adjective βροτογηρυς [brotogerus: human-voiced], was not combined with a species-group name when originally established, and would be masculine according to ICZN's Articles 30.1, 30.1.3, 30.1.4.2 (1999). However, *Brotogeris* is feminine as ruled by ICZN's Direction 26 (Hemming 1955).

Manucodia Boddaert, 1783, formed from Malay words, was originally established in combination with the latinized feminine adjective *chalybea*, and would be feminine according to ICZN's Articles 30.2, 30.2.3 (1999). However, *Manucodia* is masculine as ruled by ICZN's Direction 26 (Hemming 1955).

Ptiloris Swainson, 1825, ends in the feminine Greek noun ρις [ris: nose], and would be feminine according to ICZN's Art. 30.1.2 (1999), as is *Stachyris* Hodgson, 1844. However, *Ptiloris* is masculine as ruled by ICZN's Direction 26 (Hemming 1955).

Strigops Gray, 1845, a compound name ending in *ops*, originally established in combination with the latinized masculine adjective *habroptilus*, would be masculine according to ICZN's Art. 30.1.4.3 (1999). However, *Strigops* is feminine as ruled by ICZN's Direction 26 (Hemming 1955).

Helmitheros Rafinesque, 1819, is derived from the Greek verb θηραω [therao: to hunt] (Coues 1903, Jobling 1991, Donovan & Ouellet 1993), on the model of the masculine and feminine Greek word συνθηρος [suntheros: hunting with, fellowhuntress]. *Helmitheros* was originally established in combination with the masculine adjective *migratorius*, and would be masculine according to ICZN's Articles 30.1, 30.1.4.2 (1999). However, perhaps on the mistaken assumption that *Helmitheros* ended in the neuter Greek noun θερος [theros: summer], ICZN's Opinion 412 ruled it to be neuter (Hemming 1956b: 207).

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Appendix

Correct spelling of selected species-group names when combined with the genera treated herewith. F: feminine; M: masculine; N: neuter; (figures in parentheses refer to sections in text); (inv.): invariable nouns and noun phrases that could be confused with adjectival names; see also David & Gosselin (2002) for the gender agreement of species-group names.

Genus name	**Correct spelling of selected species-group names**
Acanthornis, F (7b):	*magna.*
Acropternis, M (7c):	*infuscatus.*
Actitis, M (7c):	*macularius.*
Agapornis, M (7b):	*ablectaneus, canus, catumbella* (inv.), *nanus, personatus, pullarius, swinderianus, taranta* (inv.).
Aglaeactis, F (2):	*caumatonota, pamela* (inv.), *parvula, ruficauda* (inv.).
Agriornis, M (7b):	*andecola* (inv.), *albicauda* (inv.), *intermedius, leucurus, lividus, maritimus, micropterus, montanus, murinus, solitarius.*

Alopochen, F (7b): *aegyptiaca.*

Amaurornis, F (7b): *flavirostra* (inv.), *inepta, isabellina, javanica, leucomelana, midnicobarica, moluccana, olivacea, pallida, phoenicurus* (inv.), *ruficrissa* (inv.), *ultima.*

Amblyornis, F (7b): *germana, inornata, nubicola* (inv.).

Ammomanes, F (7b): *burra, cinctura* (inv.)*, *darica, erythrochroa* (inv.), *iranica, isabellina, mya* (inv.), *phoenicura, saturata, testacea.*

Ammoperdix, M (7b): *intermedius, peraticus.*

Ampelion, M (2): *rubrocristatus, rufaxilla* (inv.).

Andigena, F (6): *cucullata, hypoglauca, spilorhynchus* (inv.)** [*contra* David & Gosselin 2002]

Anthreptes, M (7c): *rhodolaemus, tephrolaemus* [not *rhodolaema, tephrolaema* as in Peters (1967), etc.].

Anthropoides, M (5): *paradiseus.*

Aplonis, F (9): *pachyrampha* [not *pachyramphus* as in Peters 1962), etc.].

Ara, M (8): *ambiguus, ararauna* (inv.), *bolivianus, cyanopterus, chloropterus, manilatus, maracana* (inv.), *mexicanus, severus.*

Aramides, M (5): *cajanea* (inv.), *calopterus, mexicanus, pacificus, saracura* (inv.), *ypecaha* (inv.).

Aratinga, F (10): *acuticaudata, aeruginosa, alticola* (inv.), *aurea, auricapillus* (inv.), *caixana, chloroptera, frontata, griseipecta* (inv.), *guarouba* (inv.), *haemorrhous* (inv.)**, *holochlora, jandaya* (inv.), *leucophthalma, mitrata, nana, neoxena, propinqua, strenua, surinama, xanthogenia.*

Augastes, M (7b): *lumachella* (inv.), *scutatus.*

Bambusicola, M (7a): *thoracicus.*

Basilornis, M (7b): *galeatus, mirandus.*

Bleda, M (1): *canicapillus* (inv.), *eximius, notatus, syndactylus.*

Brachypteracias, M (9): *leptosomus, squamiger.*

Brotogeris, F (11): *chrysosema* (inv.), *chrysoptera, cyanoptera, pyrrhoptera, tirica* (inv.), *tuipara* (inv.), *versicolurus* (inv.)*.

Butorides, F (5): *actophila, albolimbata, atricapilla* (inv.), *carcinophila, cinerea, javanica, macrorhyncha, spodiogaster* (inv.), *striata.*

Callaeas, M (7c): *cinereus.*

Caloperdix, M (7b): *ocellatus, oculeus, sumatranus.*

Carpornis, F (7b): *cucullata, melanocephala.*

Casiornis, M (7b): *fuscus, rufus.*

Certhiaxis, M (10): *albicapilla* (inv.), *albigula* (inv.), *cinnamomeus, cisandinus, curtatus, demissus, dissitus, furcatus, goyanus, gutturatus, hypostictus, marabinus, mustelinus, obsoletus, pallidus, peruvianus, pyrrhophius, russeolus, semicinereus, subcristatus, sulphurifer, valencianus, vulpecula* (inv.), *vulpinus.*

Ceryle, M (7c): *caurinus, giganteus, guttulatus, leucomelanurus, maximus, pallidus, stellatus, syriacus, torquatus.*

Chaetornis, F (7b): *striata.*

Chen, F (7b): *atlantica, canagica.*

Chionis, M (7c):	*albus.*
Chlidonias, M (7c):	*hybrida* (inv.), *indicus, javanicus, leucopterus, niger.*
Chlorestes, F (9):	*notata, obsoleta.*
Chlorornis, M (7b):	*bolivianus, celatus, dilutus.*
Chthonicola, M (7a):	*sagittatus.*
Cinclodes, M (5):	*columbianus, patagonicus* [not *columbiana, patagonica*, as in Peters (1951), etc.].
Cinnyris, M (7b):	*aeger, afer, alter, andamanicus, arestus, asiaticus, aurora* (inv.), *bifasciatus, buvuma* (inv.), *chalceus, chalybeus, chloropygius, coccinigastrus, cupreus, erythrocercus, exquisitus, fasciatus, flavigastra* (inv.), *frenatus, fuscus, habessinicus, hindustanicus, inclusus, infrenatus, intermedius, lotenius, lucidipectus* (inv.), *melanogastrus, microrhynchus, minullus, mohelicus, notatus, ornatus, orphogaster* (inv.), *osea* (inv.), *polyclystus, proselius, pulchellus, regius, souimanga* (inv.), *strophium* (inv.), *suahelicus, superbus, talatala* (inv.), *usambaricus, venustus.*
Cissopis, M (7c):	*leverianus.*
Cisticola, M (7a):	*ambiguus, amphilectus, angusticauda* (inv.), *anonymus, arcanus, argenteus, aridulus, arundicola* (inv.), *awemba* (inv.), *bodessa* (inv.), *brachypterus, galiginus, cherina* (inv.), *chiniana* (inv.), *cinereolus, cinnamomeus, cisticola* (inv.), *dexter, diminutus, distinctus, dumicola* (inv.), *egregius, elusus, emendatus, equicaudatus, eremicus, erythrocephalus, eximius, ferrugineus, fulvicapilla* (inv.), *fuscicapilla* (inv.), *griseus, guinea* (inv.), *haematocephala* (inv.)**, *haesitatus, hypoxanthus, inexpectatus, isabellinus, isodactylus, katanga* (inv.), *lineocapilla* (inv.), *loanda* (inv.), *luapula* (inv.), *lufira* (inv.), *maculatus, malaya* (inv.), *marginatus, mashona* (inv.), *mbeya* (inv.), *melanurus, modestus, mongalla* (inv.), *monticola* (inv.), *namaqua* (inv.), *namba* (inv.), *nanus, neuroticus, nigrostriatus, niloticus, nyasa* (inv.), *nyika* (inv.), *omalurus, oreophilus, perennius, perplexus, perpullus, petrophilus, polionotus, procerus, pyrrhomitra* (inv.), *restrictus, robustus, rufilatus, ruficapilla* (inv.), *rusticus, rufus, scotopterus, semifasciatus, semirufus, suahelicus, subruficapilla* (inv.), *sylvia* (inv.), *taciturnus, tenebricosus, tonga* (inv.), *ukamba* (inv.), *validus, venustulus, victoria* (inv.), *wambera* (inv.), *winneba* (inv.).
Climacteris, M (7c):	*inexpectatus, leucophaeus, melanotus, melanurus, olinda* (inv.), *picumnus* (inv.), *rufus, superciliosus.*
Colonia, F (1):	*colonus* (inv.), *fuscicapillus* (inv.), *leuconota, poecilonota.*
Conopias, M (7c):	*albovittatus, distinctus, inornatus, parvus, trivirgatus.*
Coracias, M (11):	*abyssinicus, caudatus, cyanogaster* (inv.), *garrulus, indicus, mosambicus, noevius, spatulatus.*
Cormobates, F (7b):	*inexpectata, intermedia, leucophaea.*
Corythopis, M (7c):	*subtorquatus, torquatus.*
Creurgops, M (4):	*dentatus.*
Cyanochen, F (7b):	*cyanoptera.*
Cyclarhis, F (2):	*cantica, flavipectus* (inv.), *ochrocephala, parva, saturata.*

Cyornis, M (7b):	*caerulatus, coeruleatus, concretus, cyaneus, dialilaemus, djampeanus, hainanus, hyacinthinus, indochina* (inv.), *lamprus, lepidulus, ligus, omissus, peromissus, rufigastra* (inv.), *superbus, turcosus.*
Delichon, N (10):	*cashmiriense, dasypus* (inv.), *lagopodum, meridionale, nigrimentale, nipalense, urbicum.*
Diglossopis, M (7c):	*cyaneus, glaucus, indigoticus, medius, obscurus, pallidus, saturatus, tryanthinus.*
Dives, M (7a):	*atroviolaceus.*
Drymodes, F (7b):	*brunneopygia, pallida.*
Emblema, N (1):	*bellum, guttatum, interpositum, oculatum, pictum.*
Eremopterix, M (7c):	*khama* (inv.), *griseus, leucopareia* (inv.), *melanocephalus, signatus.*
Eriocnemis, F (2):	*catharina* (inv.), *mosquera* (inv.), *sapphiropygia, smaragdinipectus* (inv.), *vestita.*
Eudynamys, M (7c):	*corvinus, cyanocephalus, malayanus, melanorhynchus, minimus, picatus, scolopaceus, subcyanocephalus.*
Eumyias, M (7c):	*albicaudatus, ruficrissa* (inv.), *sordidus, thalassinus.*
Eutoxeres, M (7b):	*aquila* (inv.), *heterurus, mundus.*
Foulehaio, M (9):	*carunculatus.*
Garrulax, M (6):	*erythrolaemus* [not *erythrolaema* as in Peters (1964), etc.].
Geotrygon, F (2):	*leucometopia* [not *leucometopius* as in Peters (1937), etc.].
Glaucis, M (7c):	*aeneus, columbianus, hirsutus.*
Graminicola, M (7a):	*sinicus, striatus.*
Gymnopithys, M (10):	*castaneus, lunulatus, maculatus, pallidigula* (inv.), *pallidus, peruanus, rufigula* (inv.).
Heliactin, F (2):	*bilophus* (inv.)*, *cornuta.*
Heliolais, M (7c)	*erythropterus, jodopterus, rhodopterus.*
Heliopais, M (7b):	*personatus.*
Heliothryx, M (10):	*auriculatus, auritus, phainolaemus.*
Helmitheros, N (11):	*vermivorum.*
Henicopernis, M (10):	*fraterculus* (inv.), *infuscatus*, *longicauda* (inv.), *minimus.*
Heteromyias, M (7c):	*atricapilla* (inv.).
Hylacola, F (7a):	*cauta, pyrrhopygia.*
Hylophylax, M (7b):	*consobrinus, inexpectatus, lepidonotus, naevius, nigrigula* (inv.), *obscurus, ochraceus, peruvianus, poecilinotus, punctulatus, subochraceus, vidua* (inv.).
Hymenops, M (4):	*andinus, perspicillatus.*
Illadopsis, F (2):	*abyssinica, albipectus* (inv.), *dilutior, extrema, gularis, iboensis, kivuensis, loima* (inv.), *moloneyana, monachus* (inv.), *poensis, puguensis, pyrrhoptera, rufipennis.*
Iridophanes, M (7b):	*aureinucha* (inv.), *pulcherrimus.*
Iridosornis, M (7b):	*bolivianus, ignicapillus* (inv.), *porphyrocephalus.*
Jacamerops, M (4):	*aureus.*
Ketupa, F (10):	*piscivora.*

Lagopus, F (1):	*alba, capta, helvetica, hibernica, hyperborea, japonica, lapopus* (inv.), *leucoptera, leucura, macrorhyncha, muta, pyrenaica, rossica, saturata, scotica, transbaicalica, ungavus* (inv.), *variegata.*
Lampornis, M (7b):	*calolaemus* [not *calolaema* as in Peters (1945), etc.].
Laniisoma, N (2):	*venezuelense.*
Leucopternis, M (2):	*lacernulatus, plumbeus, polionotus, schistaceus, semiplumbeus.*
Lewinia, F (10):	*brachipus* (inv.), *capta, insulsa, mirifica.*
Lochmias, M (7c):	*castanonotus, nematura* (inv.)**, *obscuratus, sororius.*
Lophornis, M (7b):	*brachylophus, chalybeus, magnificus, ornatus, pavoninus, punctigula* (inv.), *stictolophus.*
Lophortyx, F (7b):	*achrustera, californica, decolorata, fulvipectus* (inv.), *impedita, orecta, plumbea, sana.*
Lophozosterops, M (4):	*analogus, elongatus, hartertianus, javanicus, stachyrinus, subcristatus.*
Loxops, M (4):	*coccineus, ochraceus, rufus.*
Lymnocryptes, M (7b):	*minimus.*
Machetornis, F (7b):	*rixosa.*
Macrodipteryx, F (2):	*vexillarius* (inv.).
Manucodia, M (11):	*alter, ater, subalter, chalybatus, purpureoviolaceus.*
Melanoperdix M (7b):	*niger.*
Melozone, F (2):	*biarcuata, rubricata.*
Mesitornis, M (7b):	*variegatus.*
Metopothrix, F (2):	*aurantiaca.*
Microrhopias, M (7c):	*albicauda* (inv.), *consobrinus, microstictus, virgatus.*
Milvago, F (1):	*chimachima* (inv.), *cordata.*
Mitu, N (10):	*tomentosum, tuberosum.*
Muscisaxicola, M (7a):	*albilora* (inv.), *alpinus, argentina* (inv.), *capistratus, cinereus, columbianus, flavinucha* (inv.), *griseus, maclovianus.*
Myiopagis, F (2):	*subcinerea* [not *subcinereus* as in Peters (1979b), etc.].
Neochen, F (7b):	*jubata.*
Neocrex, F (2):	*colombiana* [not *columbiana* as in David & Gosselin (2002), etc.].
Nigrita, M (1):	*candidus, canicapillus* (inv.), *diabolicus, fusconotus* (inv.)*, *schistaceus, sparsimguttatus.*
Northiella, F (10):	*haematogaster* (inv.), *haematorrhous* (inv.)**.
Numida, M (11):	*coronatus, galeatus, intermedius, maximus, mitratus, papillosus.*
Nyctyornis, M (7b):	*amictus, brevicaudatus.*
Oreortyx, M (7b):	*eremophilus, pictus, plumifer.*
Orthonyx, M (2):	*victorianus.*
Pachycare, N (2):	*flavogriseum, subaurantium, subpallidum.*
Paramythia, F (2):	*alpina, brevicauda* (inv.), *montium* (inv.), *olivacea.*
Penelopides, M (5):	*basilanicus, exarhatus, subniger.*
Peneothello, F (9):	*atricapilla* (inv.), *bimaculata, cryptoleuca, cyanus* (inv.), *maxima, quadrimaculata, sigillata, subcyanea, vicaria.*
Phapitreron, M (7b):	*amethystinus, maculipectus* (inv.).

Philentoma, F (3): *caesia, dubia, pyrhoptera, velata.*

Philydor, N (2): *acritum, amaurote, anxium, assimile, atricapillus* (inv.), *bolivianum, chapadense, cognitum, colligatum, columbianum, cuchiverus* (inv.), *diluviale, dimidiatum, erythrocercum, erythronotum, erythropterum, flavipectus* (inv.), *fuscipenne, fuscum, guttulatum, lineatum, lyra* (inv.), *mentale, montanum, ochrogaster* (inv.), *oleagineum, pallidum, perijanum, panerythrum, ruficaudatum, ruficrissa* (inv.), *rufosuperciliatum, rufum, simile, striaticolle, striatum, strigillatum, striolatum, subalare, subfulvum, subulatum, temporale, venezuelanum, virgatum.*

Phylidonyris, M (10): *braba* (inv.), *caudatus, halmaturinus, indistinctus, inornatus, niger, pyrrhopterus, undulatus.*

Pinicola, F (7a): *californica, eschatosa, flammula* (inv.), *leucura, montana, pacata, subhimachala.*

Pionites, M (5): *leucogaster* (inv.), *melanocephalus, pallidus, xanthomerius, xanthurus.*

Piprites, F (5): *boliviana, perijana, pileata.*

Pithys, M (10): *brevibarba* (inv.), *castaneus, peruvianus.*

Prionops, M (4): *angolicus, concinnatus, cristatus, gabela* (inv.), *graculinus, intermedius, melanopterus, plumatus, poliocephalus, poliolophus.*

Procnias, M (6): *albus, carnobarba* (inv.), *tricarunculatus.*

Pseudocolopteryx, F (2): *dinelliana.*

Ptiloris, M (11): *magnificus, paradiseus.*

Pygoscelis, M (7c): *antarcticus, papua* (inv.), *taeniatus.*

Pyrrhomyias, M (7c): *cinnamomeus, pyrrhopterus.*

Ramphotrigon, N (10): *bolivianum, fuscicauda* (inv.), *megacephalum, pectorale, ruficauda* (inv.), *venezuelense.*

Rhinomyias, M (7c): *additus, brunneatus, colonus* (inv.), *isola* (inv.), *nicobaricus, olivaceus, perolivaceus, ruficauda* (inv.), *ruficrissa* (inv.), *subsolanus, zamboanga* (inv.).

Rhodopechys, M (7b): *alienus, amantum* (inv.), *githagineus, mongolicus, obsoletus, sanguineus.*

Rhopornis, M (7b): *ardesiacus.*

Rhyacornis, F (7b): *fuliginosa.*

Rupicola, M (7a): *peruvianus, rupicola* (inv.), *sanguinolentus, saturatus.*

Saxicola, M (7a): *albofasciatus, albonotatus, altivagus, armenicus, atratus, bifasciatus, burmanicus, caprata* (inv.), *cognatus, ferreus, fruticola* (inv.), *indicus, leucurus, luctuosus, macrorhynchus, maurus, moptanus, pallidigula* (inv.), *promiscuus, pyrrhonotus, rubetra* (inv.), *rubicola* (inv.), *sibilla* (inv.), *torquatus, variegatus.*

Saxicoloides, M (5): *erythrurus, fulicatus, intermedius, leucopterus.*

Sayornis, M (7b): *amnicola* (inv.), *aquaticus, pallidus, saya* (inv.), *semiater.*

Schiffornis, F (7b): *aenea, amazona, dumicola* (inv.), *intermedia, olivacea, stenorhyncha, turdina.*

Schoenicola, M (7a): *platyurus.*

Schoeniophylax, M (7b): *phryganophilus.*

Seleucidis, M (10): *melanoleucus.*

Siphonorhis, F (2): *americana.*

Siptornopsis, F (2): *hypochondriaca.*

Speirops, M (4): *brunneus, leucophoeus, melanocephalus.*

Spiziapteryx, F (2): *circumcincta.*

Stelgidopteryx, F (2): *cacabata, psammochroa.*

Strigops, F (11): *habroptila.*

Sypheotides, M (5): *indicus.*

Tchagra, M (8): *armenus, cathemagmenus, confusus, cruentus, cucullatus, habessinicus, mandanus, minutus, mozambicus, nothus, pallidus, remotus, rufofuscus, senegalus, tchagra* (inv.).

Tiaris, M (6): *canorus, fuliginosus, fumosus, haplochroma* (inv.), *intermedius, obscurus, olivaceus, omissus, pacificus, pauper* (inv.), *pusillus, ravidus.*

Tigriornis, F (7b): *leucolopha.*

Todiramphus, M (3): *abyssinicus, albicilla* (inv.), *albonotatus, amoenus, anachoreta* (inv.), *australasia* (inv.), *azelus, brachyurus, chloropterus, cinnamominus, colonus* (inv.), *dammerianus, enigma* (inv.), *eximius, incinctus, interpositus, laubmannianus, leucopygius, mala* (inv.), *marinus, melanodera* (inv.), *nigrocyaneus, obscurus, ornatus, pilbara* (inv.), *pyrrhopygius, regina* (inv.), *sacer, sanctus, saurophagus, sordidus, stictolaemus, torresianus, tutus, veneratus, vicina* (inv.).

Touit, M (10): *batavicus, dilectissimus, melanonotus, purpuratus, stictopterus, surdus.*

Treron, M (7b): *ada* (inv.), *adinus, apicauda* (inv.), *aromaticus, bicinctus, brevicera* (inv.), *calvus, chlorigaster* (inv.), *chloropterus, curvirostra* (inv.), *erimacrus, filipinus, glaucus, griseicapilla* (inv.), *griseicauda* (inv.), *hainanus, haliplous, hypothapsinus, javanus, laotinus, medioximus, mesochlous, miza* (inv.), *modestus, nasica* (inv.), *oblitus, oxyurus, parvus, pegus, permagnus, phoenicopterus, pompadora* (inv.), *psittaceus, pulverulentus, purpureus, smicrus, sororius, sphenurus, waalia* (inv.), *xenius, zaleptus.*

Tricholaema, F (3): *diademata, flavipunctata, frontata, hirsuta, lacrymosa, leucomelas* (inv.), *massaica, melanocephala.*

Turdoides, F (5): *atra, clamosa, caudata, cinerea, fulva, griseosquamata, hyperythra, hypoleuca, hyposticta, keniana, lacuum* (inv.), *leucocephala, leucopygia, limbata, malabarica, maroccana, platycirca, plebejus* (inv.), *querula, rubiginosa, sindiana, sonivia, squamulata, stictilaema, striata, subrufa, taprobanus* (inv.), *tenebrosa.*

Turnix, M (8): *baweanus, castanotus, fasciatus, floresianus, furvus, hottentottus, lepuranus, lucianus, maculosus, melanogaster* (inv.), *melanotus, nanus, ocellatus, rostratus, rufilatus, saturatus, sumbanus, sylvaticus, varius.*

Urolais, M (7c): *cinderella* (inv.), *epichlorus.*

Xanthotis, M (7c): *filiger, macleayanus, polygrammus.*

Xolmis, M (10): *cinereus, coronatus, dominicanus, niveus, pepoaza* (inv.), *rubetra* (inv.), *velatus.*

Zosterops, M (4): *abyssinicus, anomalus, atricapilla* (inv.), *basilanicus, borbonicus, brevicauda* (inv.), *chlorocephalus, chrysolaemus, cinereus, citrinella* (inv.), *conspicillatus, delicatulus, egregius, erythropleurus, eurycricotus, exiguus,* *ficedulinus, flavissimus, flavus, floridanus, fuscicapilla* (inv.), *gregarius, griseonota* (inv.)*, *griseotinctus, hainanus, halmaturinus, hypoxanthus, inornatus, intermedius, japonicus, kasaicus, luteus, luzonicus, maderaspatanus, majusculus, mauritianus, melanurus, minutus, modestus, montanus, nicobaricus, oblitus, olivaceus, obstinatus, oreophilus, pallidus, palpebrosus, perplexus, poliogastrus, rennellianus, semiflavus, silvanus, socotranus, splendidus, stenocricotus, strenuus, surdus, tephropleurus, ternatanus, tetiparius, ultimus, unicus, vellalavella* (inv.), *viridicatus, xanthochroa* (inv.).

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* This name is not a latinized Greek adjective, but a noun phrase formed by a Latin adjective and a latinized Greek noun.

** This name is not a latinized Greek adjective, but a noun phrase formed by two latinized Greek nouns.

The New Caledonian Owlet-nightjar *Aegotheles savesi* rediscovered?

by Joe A. Tobias & Jonathan M. M. Ekstrom

Received 19 August 2001

In April 1880 a strange bird was caught after it flew through the open window of a house in the village of Tongué, at the foot of Mount Koghi in southern New Caledonia; the specimen was passed by M. Saves to E. L. Layard who described it as *Aegotheles savesi* (Layard & Layard 1881). The only other tangible evidence of the New Caledonian Owlet-nightjar are some fossilised bones discovered in Quaternary cave deposits *c*.65 km northwest of Nouméa, near Boulouparis (Balouet & Olson 1989), and a 1913 specimen held in Rome that went unnoticed until 1999 (C. Violani & C. M. Fisher *in litt.* 1999). Despite considerable attention focused on the forests of New Caledonia (Mayr 1941, 1945, Warner 1947, Delacour 1966, Stokes 1980, Létocart 1995, Maruia/CI 1998), no new records of the owlet-nightjar emerged, apart from a handful of unsubstantiated reports from the 1930s–1960s, three from southern New Caledonia and one from the Loyalty islands (Macmillan 1939, Ekstrom *et al.* 2000, in press). The species has thus long been presumed extinct by many authorities (e.g. King 1981). Given the mystery surrounding its status, ecology and taxonomy (Olson *et al.* 1987), its apparent rediscovery is of great interest.

We had conducted almost five months intensive fieldwork in New Caledonia when, at 1840 h on 5 November 1998, an unfamiliar bird looking like a large *Aegotheles* sp. flew across a disused logging road in the Rivière Ni valley on the western flank of the Massif de Kouakoué, Province Sud. By this time, the relatively depauperate avifauna of the islands was totally familiar to us, and thus the sudden appearance at dusk of an oddly shaped species came as a surprise, especially after so many weeks of striving and failing to encounter any night birds, apart from Barn

Owls *Tyto alba*. The sighting occurred in riverine humid forest on moderate slopes at *c*.1,000 m; a description of habitat in the immediate area is given by Ekstrom *et al.* (2000). After initial views, it was seen for several seconds in flight within the open canopy of large riverine trees where it soon disappeared, and was not seen perching. It then made brief sallies between perches on three more occasions. The bird appeared *c*.30 cm long with broad but quite short and rounded wings, and an ample tail; although largely silhouetted, it seemed uniformly very dark and definitely lacked pale patches in the wing. We were immediately confident that we had relocated *Aegotheles savesi*, the first indication of its continued survival for many decades. The distinctive shape and flight action distinguished it from the only possible confusion species, the endemic race of White-throated Nightjar *Eurostopodus mystacalis exul* (only known from a single specimen and probably a distinct species: Cleere 1998, S. Olson *in litt.* 1999).

As we can provide no photographic or tape-recorded evidence of our sighting, the identification deserves detailed comment. The frequent sallying behaviour observed during the short observation period is, as far as is known, not normal for *Aegotheles*. Those few members of this genus for which foraging details are available usually rest motionless on branches and occasionally sally out or hover-glean (Beehler *et al.* 1986, Cleere 1998, Holyoak 1999), although prolonged and frequent hawking over distances of < 30 m has previously been recorded in the Australian Owlet-nightjar *A. cristatus* (Holyoak 1999). Substantial differences in morphology imply that the New Caledonian Owlet-nightjar adopts different foraging strategies to its relatives (Olson *et al.* 1987). While longer legs and shorter wings suggest a less aerial and more terrestial lifestyle, the foraging behaviour of the species is difficult to predict and presumably varies according to environmental factors such as food type and availability. Moreover, while *savesi* is apparently morphologically intermediate between *Aegotheles* and *Megaegotheles novaehollandiae*, an extinct and perhaps largely terrestrial taxon from New Zealand (Olson *et al.* 1987), the record of a bird in flight is not surprising given that the first specimen of *savesi* flew through a window.

Very few nocturnal birds occur on New Caledonia, a circumstance that facilitates the identification of those that are heard or observed. The only forest owl is the Barn Owl, a species very easily eliminated because of its size, colour and behaviour. Little is known of the habitat preferences and behaviour of the endemic owlet-nightjar and nightjar. Although it is more usual to observe true nightjars in flight rather than owlet-nightjars, there were obvious and striking differences that allowed immediate elimination of *E. m. exul*. The wing-beats were regular and fluttery, with the wings always held horizontally or slightly down-turned during occasional short glides. The shape and flight action suggested an outsized Australian Owlet-nightjar (although less fluttery), the only other species in the family with which the authors are familiar. It did not have the light buoyant flight of most nightjars, nor did it hold its wings in the v-shape so characteristic of many nightjar genera, including *Eurostopodus*, a group with which the observers are also familiar, having seen four of its constituent

TABLE 1
A comparison between wing formulae (mm from tip) of New Caledonian Owlet-nightjar *A. savesi* and White-throated Nightjar *E. m. mystacalis*.

Species	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
A. savesi	-47	-25	-11	-2	0	-3	-8	-17	-25	-34
E. m. mystacalis	-4	0	-6	-49	-79	-104	-115	-122	-133	–

species (including *mystacalis*) on numerous occasions. Most distinctively, the wings were conspicuously rounded. A glance at the wing formulas in Table 1 (comparing wing-tip shapes of the type specimen of *A. savesi* with a typical *E. m. mystacalis*) reveals that the former has very blunt and paddle-shaped wings, corresponding exactly to our observations, while the latter has highly tapered wings (unfortunately it was not possible to directly compare *savesi* with *E. m. exul*, but the wing shape of the latter is similar to *E. m. mystacalis*: N. Cleere *in litt.* 1998). Finally, the fact that it always flew or perched below the level of the upper canopy again points to the identification as an owlet-nightjar. Therefore, while all other birds occurring in New Caledonia can be swiftly eliminated, the features comfortably match those of an owlet-nightjar. We conclude that the bird involved was certainly neither an owl, nor a nightjar, and unless some similar species remains to be discovered in New Caledonia, it must have been *Aegotheles savesi*.

The bird was not seen or heard again, despite six hours of further searching in the same night, and five days and six nights of searching by several fieldworkers when we returned a week later. Although the lack of further records suggests that the individual observed did not hold a permanent territory in the immediate area, owlet-nightjars regularly shift roost-sites and are, in any case, notoriously difficult to observe in the field (Brigham & Geiser 1997, Holyoak 1999). Our single observation raises hopes that a population of this species can be conserved in New Caledonia, although its status, distribution and ecology remain unknown.

Acknowledgements

We thank the Direction des Ressources Naturelles (DRN) and the Direction du Développement Rural et de la Pêche (DDRP) in New Caledonia for permission to carry out this research, and for excellent logistical and financial support throughout the survey. The work was supported by grants from the Ligue pour la Protection des Oiseaux (LPO) and the BP Conservation Programme (a full list is presented by Ekstrom *et al.* 2000). We also thank Gary Allport, David Butler, Isabelle Faisant, Delphine Franko, Isabel Isherwood, Ronan Kirsch, Yves Létocart, Bernard Suprin, Sophie Veran, Jake Willis and Charly Zongo for sharing their skills and experience with us in the field. Clem Fisher kindly allowed access to the type specimen of *Aegotheles savesi,* and Nigel Cleere provided useful comments on the first manuscript.

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New distributional bird records from Serranía de San Lucas and adjacent Central Cordillera of Colombia

by Paul Salaman, Thomas M. Donegan & Andrés M. Cuervo

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Serranía de San Lucas in northern Colombia has been one of the greatest ornithological enigmas in the Americas. One brief 1947 bird collection in the foothills was our only knowledge of the birds of this isolated mountain range. Political instability for over 40 years deterred further investigation until expeditions conducted by the Colombian Evaluation of Biodiversity in the Andes (EBA) Project team (the authors comprising the ornithologists in the Project) were conducted to develop rapid conservation assessments of the mountain range in 1999 and 2001. Additional surveys were also conducted in the adjacent Central Cordillera. Whilst the highlands of Serranía de San Lucas from 1,500-2,700 m continue to remain unknown, we report the first ornithological records from the premontane zone to 1,400 m. Of 199 species recorded in three weeks between 1,000-1,400 m in San Lucas, 70% of species were new to the highlands, 65 species represented significant range extensions (including perhaps three undescribed subspecies), and noteworthy altitude extensions were noted for 40 species. A further 13 species recorded on the adjacent Central Cordillera also represented range extensions.

The Northern Andes diverge into three main long mountain ranges in Colombia (Western, Central and Eastern Cordilleras), which are separated by deep interandean valleys of the Magdalena and Cauca rivers. The Central Cordillera is a 750 km-long mountain range extending northwards from approximately 1° 30'N and is the highest (average 3,000 m) of Colombia's three Andean ranges, as well as the oldest, having attained elevations of over 2,000 m by the Miocene period (Hernández-Camacho *et al.* 1992). At the northeastern extreme of the Central Cordillera, a wide foothill plateau (average *c.* 500 m asl) is dissected by the Río Nechí watershed, isolating the Serranía de San Lucas from the rest of the range. Serranía de San Lucas is a 200 km long mountain range, rising from sea level to 2,700 m asl, in Dptos Antioquia and Bolivar, Northern Colombia (Fig. 1). At the 1,000 m asl contour, the Serranía de San Lucas is isolated by over 75 km from the Central Cordillera and by 65 km from the Eastern Cordillera by the Río Magdalena valley. The massif is principally of igneous origins with metamorphic intrusions rich in gold deposits. It runs parallel to the Río Magdalena on its eastern flank and with Río Nechí and Río Cauca on its western and northern flanks respectively.

From the late nineteenth and twentieth centuries bird collectors began to explore the northern part of Central Cordillera of Colombia, especially around Medellín, Colombia's second largest city (summarised in Cuervo *et al.* 2001). Consequently, avifaunal knowledge of the Central Cordillera is relatively good compared to other regions of Colombia, e.g. the eastern slope of the Andes. However, remarkably it has revealed two new species for science in recent years (see Graves 1997, Cuervo *et al.* 2001). Several life-zones on this Cordillera and the Serranía de San Lucas, on the northeastern humid premontane slopes (1,200-2,000 m), remained remarkably little-known until surveys carried out by the Colombian EBA team.

Melbourne A. Carriker, Jr. briefly surveyed the tropical foothill elevations (300-1,000 m) near the town of Santa Rosa in Serranía de San Lucas and surrounding lowlands near Simití for a total of 17 days in April-May 1947 (Paynter 1997). No other ornithological surveys have been conducted above 1,000 m (up to 2,600 m) in Serranía de San Lucas. Only a small number of specimens were taken in the 1947 expedition but, even in this survey, four threatened bird species were found: Blue-knobbed Curassow *Crax alberti*, Chestnut-bellied Hummingbird *Amazilia castaneiventris,* White-mantled Barbet *Capito hypoleucus* and Recurve-billed

Bushbird *Clytoctantes alixii*. Hilty & Brown (1986) mapped 58 bird species above 1,000 m on Serranía de San Lucas. Of these, all bar 13 typically higher-elevation species recorded by Carriker are widespread throughout Colombia and assumed to occur (e.g. Black Vulture *Coragyps atratus*).

Exceptionally harsh physical relief and environmental conditions (dense swamps and high malaria prevalence) have deterred human access until the latter half of the 20th century. Until relatively recently, the isolated Serranía was a wilderness area of forest, known only as an important strategic area for the Ejercito de Liberación Nacional (ELN) guerrilla. However, massive gold deposit discoveries in the 1990s and an expansion of illicit coca production drastically changed the San Lucas landscape. Being biologically unknown and with mounting threats, the justification for fieldwork in the Serranía was compelling. Our principal aim was to conduct ornithological surveys across Serranía de San Lucas and adjacent slopes of the Central Cordillera, in order to compile bird inventories along the altitudinal gradient, where no ornithological information previously existed.

Abbreviations

† = specimen collected; CORANTIOQUIA = Corporación Autónoma Regional del Centro de Antioquia; Dpto = Departamento (sub-political region); EBA = Evaluation of Biodiversity in the Andes Project; ICN-MHN = Instituto de Ciencias Naturales, Museo de Historia Natural, Universidad Nacional de Colombia; Mpo = Municipio (Municipality); MNH = Mist-Net Hours per meterage (1 metre of net per hour = 1); Taxonomy and nomenclature largely follow Ridgely & Tudor (1989, 1994) and Salaman *et al.* (2001). Species sequence follows Hilty & Brown (1986).

Fieldwork and study sites

Research methods involved mist-netting, sound-recording and direct observation along transects at each site with the objectives of: (a) rapidly collecting standardised and replicable data; (b) documenting species compositions and biological variation; and (c) evaluating conservation priorities across the region. A summary of the location, fieldwork effort and summarised results for each study site is presented in Table 1.

Serranía de San Lucas: further details of study sites are described in Salaman & Donegan (2001). Sites were studied by all the authors unless otherwise stated.

San Pablo (5 6, 9–12 March 2001), Mpo San Pablo, Dpto Bolivar (100–250 m). Aquatic habitats, open country and secondary growth were surveyed largely by observations and with a small number of mist-nets, within several km of the town in the following areas: Cañabraval, San Pablo, Bajo Taracue (all secondary growth near San Pablo town), the Río Magdalena between Puerto Wilches and San Pablo and Cienaga Canaletal (a large natural lake *c.* 1.5 km diameter with secondary growth and adjacent woodland dominated by bamboo). Studied by TMD and Javier Bustos.

La Punta (15–20 March 2001), southeast slope of the Río San Pedro Frío valley, Mpo Santa Rosa del Sur, Dpto Bolivar (1,000–1,400 m). The valley slope is transected by a road (from Santa Rosa) descending 3 km from El Retén at 1,400 m to the small hamlet of La Punta (*c.* 10 houses at 1,300 m), from where a mule trail descends 2 km to the Quebrada La Romera and Río San Pedro Frío (1,000 m). The steep valley slope has extensive patches of secondary growth and some heavily disturbed remnant forest patches. Owing to anti-personnel land-mined forest trails, observations were restricted to forest borders, the road and mule trail both below (15–17 March) and above (17-20 March) La Punta.

La Teta Resort (22 March–3 April 2001), northwest slope of the San Pedro Frío valley, Mpo Santa Rosa del Sur, Dpto Bolivar (1,300 m). Following the river crossing, the mule trail from La Punta at La Punta ascends to San Pedro Frío, a miners' commune on the lower slopes of La Teta peak. La Teta is the highest mountain in the Serranía de San Lucas (*c.* 2,700 m). Above the stream, *c.* 2 km northwest of La Punta, the trail passes a small (*c.* 20 ha) fragment of forest and secondary growth in a stream valley, bordered by pasture and overgrown scrub.

Apollo 13 (3–8 August 1999), Finca La Esperanza, Vereda Malena-Río Bagre, Mpo Segovia, Dpto Antioquia (300 m). Lowland humid forest (*c.* 2,500 mm rainfall/year) located c. 8 km southeast of the gold-mining commune of Puerto Lopez. A lowland forest patch (*c.* 1,500 m x 500 m), straddling three ridges about a low peak (base camp), formed the basis of our transect. The forest core was slightly disturbed with several trees with large diameter at breast height (>10 m), canopy height *c.* 35 m, high subcanopy and understorey to *c.* 5 m. The understorey was sparsely vegetated, although characterised by dense *Heliconia* spp. thickets and spiny palm clusters, whilst there was a low abundance and diversity of epiphytes.

Northeastern Cordillera Central: the 750 km-long main Central Cordillera terminates at 7°N with foothill ridges descending northwards to 7°30'N into the tropical lowlands of the Nechí and lower Cauca valleys. Two sites on the western flank of the Río Porce were studied: one in the most northerly highland area of the northeastern slope (La Forzosa) and another 35 km north on the edge of the lowlands (Alto de los Tarros).

Alto de los Tarros (20–24 August 1999), Reserva Regional Bajo Cauca-Nechí, Vereda La Tirana, Mpo Anorí, Dpto Antioquia (800–850 m). This site lay within an extensive fragment of foothill humid forest (*c.* 45,000 ha). A little-used trail along a high ridge through primary forest in the Río Anorí watershed was used as a transect. The forest physionomy is similar to Apollo 13, but virtually undisturbed, with lower vegetation strata (canopy *c.* 30 m), more broken canopy by treefalls on steep slopes, higher epiphyte abundance and notably more woody stem plants in the understorey. Studied by the authors, José Manuel Ochoa and Juan Lázaro Toro.

La Forzosa (26–29 August 1999), Reserva Natural La Forzosa (*c.* 450 ha), the Quebrada Chaquiral and La Soledad watershed *c.* 6 km south of Anorí, Vereda Roble Arriba, Mpo Anorí, Dpto Antioquia (1,550 m). Primary premontane humid forest (*c.* 3,000 mm rainfall/year). A 300 m transect ascended a ridge through dense understorey, while observations were also conducted along the Quebrada La Soledad. Upper slope and ridgetop forest was stunted and gnarled with a canopy height from

5–8 m, and epiphytes abundant, especially mosses, lichens and bromeliads. Vegetation on the lower slopes and valleys were typical of forest at 1,500 m, with a canopy to 15–20 m and a moderately dense understorey composed of woody stem bushes and sparse herbaceous cover, with a moderate abundance of arboreal epiphytes. The La Forzosa reserve has been subject to fairly intensive surveys since 1999 led by AMC and also with the Bird Study Group Universidad de Antioquia (M. Castaño, C. Delgado, J. C. Luna, S. Galeano, A. Palacio, P. Lopera, A. Patiño, José Manuel Ochoa, A. Vasco and others) up to 1,820 m asl (Cuervo *et al.* 1999).

Species accounts

Species accounts; we provide a brief description of each species' distribution and status in Colombia from Hilty & Brown (1986), with additional recent information. Specific localities not mentioned above are given latitude and longitude co-ordinates when first mentioned. We follow this with our own information at each site and then summarise the significance of our records. The number of birds captured for each species is given in parentheses, e.g. La Punta (16) means that 16 birds were caught at Study Site 2 (La Punta). Sound recordings by PS and AMC have been deposited at the National Sound Archive (Wildlife Section, British Library). All mist-netted birds were weighed and measured and were photographed from various angles. Photographs have been catalogued with VIREO (Philadelphia) and all specimens (†) have been deposited and catalogued at ICN-MHN. Noteworthy distributional records, based on Hilty & Brown (1986) unless otherwise stated, are presented in four categories: (i) 37 significant range extensions (>100 km or first records for the region); (ii) 31 100 km northwards range extensions from the Central Cordillera to Serranía de San Lucas of species typically distributed above 1,000 m; (iii) six range extensions northwards to the north of the Central Cordillera; (iv) a brief list of 17 other important records of species with poorly-known distributions in the region; (v) 40 noteworthy altitude extensions.

(i) Thirty-seven significant range extensions

The following species present noteworthy range extensions (> *c.* 100 km) or biogeographical records, based on distribution information in Hilty & Brown (1986) and recent publications. Less significant range extensions are not published here but a checklist of all species recorded in Serranía de San Lucas (virtually all of which present range extensions of tens of km with many new departmental records) is presented in Salaman & Donegan (2001).

LEAST GREBE *Podiceps dominicus*
Previously known from the Cauca valley and the Caribbean coast of Colombia. Two individuals were observed near La Forzosa in small lakes created from gold mining excavations at Madreseca *c.* 6 km north of Anorí on 19 August 1999. This record represents the first record for the Central Cordillera.

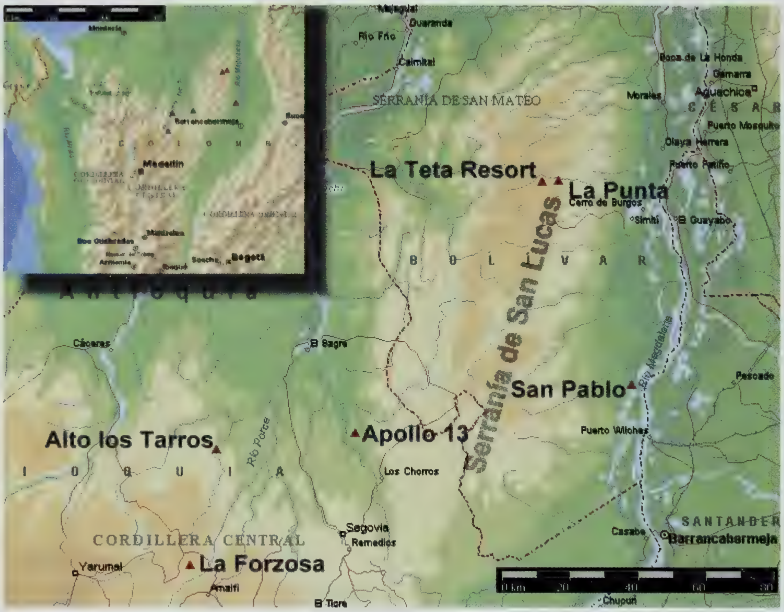
Majagual
Guaranda
Río Frío
Caimital
SERRANÍA DE SAN MATEO
Boca de La Honda
Gamarra
Aguachica
Morales
C E S A R
Puerto Mosquito
Olaya Herrera
Puerto Patiño
La Teta Resort
La Punta
Cerro de Burgos
Simití
Guayabo
B O L Í V A R
Serranía de San Lucas
El Bagre
Cáceres
San Pablo
Río Magdalena
Puerto Wilches
Alto los Tarros
Apollo 13
Río Porce
Los Chorros
A N T I O Q U I A
Segovia
Remedios
CORDILLERA CENTRAL
S A N T A N D E R
Casabe
Barrancabermeja
Yarumal
La Forzosa
Amalfi
Chupurí
0 km
20
40
60
80
Medellín
Bogotá

Figure 1. Map of the central-northern Colombia, showing Serranía de San Lucas and the Study Sites throughout the region (San Pablo; La Punta; La Teta Resort; Apollo 13; Alto los Tarros; La Forzosa).

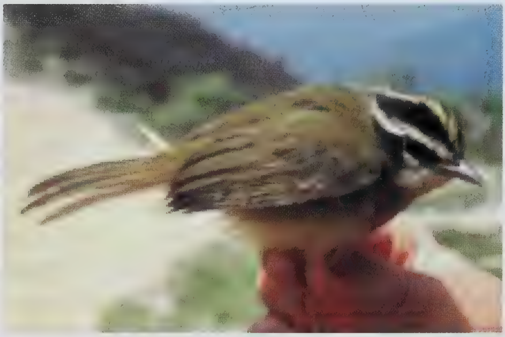

Figure 3. Three-striped Warbler *Basileuterus tristriatus*; individuals from Serranía de San Lucas represent an undescribed subspecies.

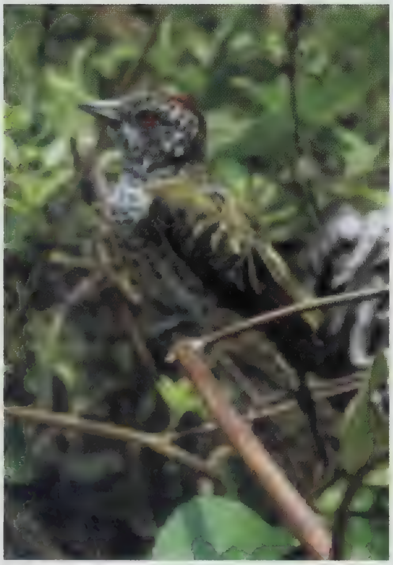

Figure 2. Sharpbill *Oxyruncus cristatus* at La Teta Resort; new for Colombia.

GREAT BLUE HERON *Ardea herodias*
An immature observed at San Pablo on 5, 7 & 9 March 2001 on an island in the Río Magdalena off Puerto Wilches (*cf.* 800–1,000 observations of Cocoi Heron *A. cocoi* at this site). Winters throughout the Cauca valley and Caribbean lowlands, but previously unknown from the mid-Magdalena valley. This record probably relates to a straggler.

LESSER YELLOW-HEADED VULTURE *Cathartes burrovianus*
Several observations made at San Pablo and Apollo 13. Also one individual recorded on Cienaga Sahaya, southern Dpto Cesar (8°42'N, 73°47') by TMD on 14 January 2002. Known from one locality in the interior Caribbean lowlands along the Río Magdalena (160 km range extension to Apollo 13) and reported by Stiles & Bohórquez (2000) in Puerto Boyacá and Puerto Romero. Probably widely distributed across the humid forest lowlands west of Serranía de San Lucas.

WHITE-TAILED KITE *Elanus leucurus*
Observed several times along the Río Nechí near El Bagre (7°36'N, 74°47'W), 30 km northwest of Apollo 13. Previously unknown from the Caribbean lowland interior. Suspected to have increased its range 170 km northwest from the mid-Magdalena valley or Caribbean coastal fringe with forest clearance.

PLUMBEOUS HAWK *Leucopternis plumbea*
An adult captured at Apollo 13 (1) had a distinctive olive crown - a previously undescribed feature, but it is unclear if this represents an aberrant plumage or perhaps a geographical characteristic. This little-known and Near-Threatened species presents a 90 km easterly range extension from the northern foothills of the Western Cordillera.

WHITE HAWK *Leucopternis albicollis*
Observed flying over Apollo 13 and La Forzosa. These records present a 90 km easterly range extension from the northern foothills of the Western Cordillera and link with recent records 150 km SE on the western slope of the Eastern Cordillera at La Grilla in Serranía de Quinchas, Dpto Boyacá (Stiles *et al.* 1999).

GREAT BLACK HAWK *Buteogallus urubitinga*
One observed at San Pablo soaring low over the northern edge of Cienaga Canaletal and several observed at Cienaga Sahaya, Dpto Cesar by TMD *et al.* in January 2002. Previously known from the Caribbean coastal region and previously unknown from the Magdalena valley.

BLACK-AND-WHITE HAWK-EAGLE *Spizastur melanoleucus*
One observed in flight and perched in a small forest patch at La Teta Resort. This little known raptor is patchily distributed across Colombia with only a handful of records. The closest geographical records are 250 km distant on the western slope of Serranía de Perijá, Eastern Cordillera.

BARRED FOREST-FALCON *Micrastur ruficollis*
The song and call were heard frequently and tape-recorded at dawn at La Teta Resort, Apollo 13 and La Forzosa. Previously known from the northern foothills of the Western Cordillera (140 km SW of La Teta Resort) and from the western slope of the Eastern Cordillera at La Grilla, Serranía de Quinchas, Dpto Boyacá (Stiles *et al.* 1999) and Dpto Santander (Hilty & Brown 1986).

WATTLED GUAN *Aburria aburri*
Up to seven males heard calling at night and twilight periods in a variety of forest patches, including disturbed secondary growth in La Punta and La Teta Resort (see Donegan *et al.* 2001 for detailed observations of this species in Serranía de San Lucas). Also frequently heard at La Forzosa. The intense period of vocalizing activity in San Lucas probably corresponds to the commencement of the breeding season during the wet season of April-June. Previously known in the Central Cordillera to 90 km south of La Forzosa. These records present a northerly range extension of 220 km to Serranía de San Lucas. The species is regarded as a Very High Conservation Priority by the Cracid Specialist Group (Brooks & Strahl 2000), thus new sites of such healthy populations are potentially of great importance for conservation.

LIMPKIN *Aramus guarauna*
One observed on the south side of Cienaga Canaletal (San Pablo) on 12 March 2001, and several observed by TMD, Elkin Briceño and Blanca Huertas at Cienaga Sahaya, Dpto Cesar during January 2002. Known from scattered records across Colombia, although with only two mid-Magdalena valley localities, *c.* 320 km to the south of San Pablo (including recent records in Puerto Romero (Stiles & Bohórquez 2000)).

COMMON GROUND-DOVE *Columbina passerina*
A small number of individuals were observed in open country near Apollo 13. Geographically close records are known from throughout the Magdalena valley, but the closest records in the Cauca valley are *c.* 450 km to the south at its headwaters. A 50 km NW range extension into the Río Nechí and lower Río Cauca valley is probably due to expansion in range with deforestation from the Magdalena valley.

GROOVE-BILLED ANI *Crotophaga sulcirostris*
Observed in secondary growth near Apollo 13. Previously known north and east of Serranía de San Lucas but unrecorded west of the range.

RIDGEWAY'S PYGMY-OWL *Glaucidium (brasilianum) ridgwayi*
An individual considered to be of this taxon was observed and tape-recorded in the subcanopy at Alto de los Tarros on 23 August 1999, but not collected. This species was previously known from 250 km northwards in northern Colombia.

RED-WINGED PARROTLET *Touit dilectissima*
Small flocks were heard and observed occasionally at La Forzosa, where they fed on *Clusia* spp. fruits. Also recorded on the eastern slope of the Central Cordillera at

Quebrada El Viao, Cocorná, Dpto Antioquia (6°3'N, 75°10'W). Previously thought to be restricted to the Chocó region west of the Andes with a disjunct population in Serranía de Perijá and northern Eastern Cordillera. The seemingly resident population at La Forzosa represents a significant link between the two populations within a gap of 500 km and first record for the Central Cordillera.

GREY-RUMPED SWIFT *Chaetura cinereiventris*
Flocks, usually consisting of *c.* 20 individuals, were observed in the lowlands on both flanks of Serranía de San Lucas at San Pablo and Apollo 13. Patchily distributed in the western lowlands of Colombia. Records at San Pablo represent the first records for the Magdalena valley, although considered possibly to be present in the region by Hilty & Brown (1986).

ASHY-TAILED SWIFT *Chaetura andrei*
Six individuals were observed at very close quarters at dusk on 28-30 March 2001 above La Teta Resort (1,400 m) flocking with Band-rumped Swift *Chaetura spinicauda* and Chapman's Swift *Chaetura chapmani*, permitting excellent views of the diagnostic all-grey tail, notably longer than that of *C. brachyura*. Previously known west of the Andes in Colombia from only three localities near Sierra Nevada de Santa Marta (230 km north of La Teta Resort). This represents the first record for the Colombian Andes.

LESSER SWALLOW-TAILED SWIFT *Panyptila cayennensis*
A pair observed at La Punta on 15 March 2001. Little known in Colombia with only one previous Central Cordillera record in Caldas (Hilty & Brown 1986) and recently (250 km south of La Punta) in the mid-Magdalena Valley (Stiles *et al.* 1999).

WHITE-TIPPED SICKLEBILL *Eutoxeres aquila*
Captured at Alto de los Tarros (4) and La Forzosa (1). Previously known from the northern slope of the Western Cordillera and the upper Magdalena valley north to Dpto Caldas and Cundinamarca. These records provide a link in the 250 km gap between the Pacific and Magdalena populations.

RUFOUS-CRESTED COQUETTE *Lophornis delattrei*
Pairs and individuals observed on various occasions feeding in the canopy of flowering trees in secondary growth at La Punta and La Teta Resort. A rare and inconspicuous species previously recorded in the Central Cordillera on both slopes of the Magdalena valley in Tolima. These records represent a 330 km northwards range extension.

GREEN THORNTAIL *Popelairia conversii*
Individuals observed at La Punta were often associated with *L. delattrei* feeding high in flowering trees. Previously known only from the Pacific slope of the Western Cordillera and recently for the first time in the Magdalena valley at La Victoria, Dpto Caldas (Stiles *et al.* 1999) and La Grilla in Serranía de las Quinchas, Dpto Boyacá (5°49'N 74°19'W; 1,500 m) (Stiles & Bohórquez 2000). Sightings at La

Punta represent the most northerly records and suggest a link between the Pacific population (380 km WSW) and Magdalena valley (260 km S).

WESTERN EMERALD *Chlorostilbon melanorhynchus*
Common on both lowland flanks of Serranía de San Lucas at San Pablo and Apollo 13 and in the highlands with captures at La Punta (2, female†), La Teta Resort (6), and La Forzosa (1†). Previously known from the western slope of the Western Cordillera, one locality on the east slope of the Central Andes in Dpto Tolima, and several localities on the western slope of the Central Andes (Stiles 1996), but unrecorded in Serranía de San Lucas or elsewhere in the northern Central Andes.

WESTERN [STRIPED] WOODHAUNTER *Hyloctistes* (*subulatus*) *virgatus*
Caught at Alto de los Tarros (1), and La Forzosa (3, 2†) where it was recorded to 1,700 m in June 2000 (AMC). Additional records from the northern end of Central Cordillera at Salazar *c.* 10 km northeast of Amalfi, Mpo Amalfi, Dpto Antioquia (*c.* 6°58'N, 75°02'W, 1,600 m) in July 2001 (2, 1†; AMC). Known from the Pacific slope and the *cordobae* subspecies from the northern slope of the Western Cordillera. These records represent the first for the Central Cordillera.

RUDDY FOLIAGE-GLEANER *Automolus rubiginosus*
Caught at La Punta (1). Extends the species' range eastwards from the western slope of Serranía de San Lucas and probably relates to the *sasaimae* subspecies.

PARKER'S ANTBIRD *Cercomacra parkeri*
Commonly seen and captured at La Forzosa (10, 3†) and tape-recorded recently at Salazar (2†) in September 2000 and July 2001 (AMC). Individuals were heard, but not seen or captured, at La Teta Resort and Apollo 13. This recently-described species (Graves 1997) is little-known in life. Although it is fairly common in areas we have surveyed in the Central Andes, it is known from just a few localities. It is notable that vocalizations are distinct from *C. tyrannina*, the most closely related species, as will be detailed in future publications.

IMMACULATE ANTBIRD *Myrmeciza immaculata*
Common at La Teta Resort and La Punta (5, female†). The nominate ssp. was previously known east of the Río Magdalena to Dpto Caldas and western Colombia (Pacific slope and upper río Cauca valley; ssp. *macrorhyncha*). The female collected differs very slightly in colouration from skins consulted at ICN, being duller brown than skins labelled *berlepschii* (*macrorhyncha*) but lighter brown than nominate ssp. *immaculata*. However, it is not yet possible to tell whether this is due to clinal variation, foxing, or represents an undescribed subspecies.

CHESTNUT-CROWNED GNATEATER *Conopophaga castaneiceps*
One female captured at La Punta (1). Also caught at La Forzosa (3; 2†), and a female observed at Salazar in September 2000 (AMC). Small disjunct populations are scattered across the Andes, with populations on the northern foothills of the Western

and Central Cordillera. These represent first records for Serranía de San Lucas and northeast Central Cordillera.

SHARPBILL *Oxyruncus cristatus*
One individual was captured and photographed (Fig. 2) at La Teta Resort (1) on 25 March 2001. This is the first confirmation of the monotypic family Oxyruncidae for Colombia, and represents a 340 km range extension from Cerro Tacarcuna (*tacarunae* ssp.) on the Panamanian border and >250 km from western Venezuela (*phelpsi* ssp.).

RUFOUS-BROWED TYRANNULET *Phylloscartes superciliaris*
This species has infrequently been observed at La Forzosa since March 1999 (Cuervo *et al.* 1999), often in association with a mixed species foraging flock. Previously known 235 km SE of La Forzosa at Virolín (6°7'N, 73°12'W), Dpto Santander, Eastern Cordillera (recent sighting in March 1997 [PS]), and a specimen suspected from the Panamanian border at Cerro Tacarcuna, 270 km NW of La Forzosa. This sighting represents the first record for the Central Cordillera.

MARBLE-FACED BRISTLE-TYRANT *Phylloscartes ophthalmicus*
Captured and seen at La Punta (1), La Forzosa (2) and at Salazar (AMC). Previously known in the Central Cordillera only north to *c.* 5°N, 350 km south of La Punta.

TROPICAL PEWEE *Contopus cinereus*
Common at La Punta and La Teta Resort (4). Previously known from the Eastern Cordillera, but unrecorded in the Central Cordillera until recently, with recent observations from Río Claro refuge, Dpto Antioquia (6°11'N, 74°58'W, 300 m), on the eastern slope of the Central Cordillera (PS & AMC). A specimen was collected at Chaparral, El Limon, Dpto Tolima (3°40'N, 75°30'W) (F. Gary Stiles *in litt.*). These sightings represent the first records for the Central Cordillera and Serranía de San Lucas.

CATTLE TYRANT *Machetornis rixosus*
Common with livestock and on dirt tracks near Apollo 13, extending the species, wide lowland range to the west of Serranía de San Lucas. Additionally, a pair was observed with cattle at Roncesvalles (4°3'N, 75°36'W), western Dpto Tolima in the Central Cordillera at 2,600 m by PS *et al.*, representing the first record for the highlands of Central Cordillera, a 400 km southerly range extension from Apollo 13, and a 1,800 m altitude extension. The species' range has undoubtedly expanded with deforestation as evidenced by recent records in the Eastern Cordillera (Stiles *et al.* 1999), where the species is also reported to 2,600 m (Stiles *et al.* 2000).

SPOTTED NIGHTINGALE-THRUSH *Catharus dryas*
One captured and collected at La Punta (1†) on 18 March 2001 at 1,350 m. Previously known only from the Andean East slope and one recent specimen on the western slope of the Eastern Cordillera in Dpto. Boyacá (Stiles *et al.* 1999). Our specimen is the first record for the Central Cordillera.

PALE-VENTED THRUSH *Turdus obsoletus*
Captured at La Teta Resort (1) and at Salazar (1†) in July 2001 (AMC). Previously known from arid areas in the upper Cauca and Magdalena valleys and recently from the western slope of the Eastern Cordillera in Dpto Boyacá although subspecies was not determined (Stiles *et al.* 1998). These records represent a 350 km northwards range extension to Serranía de San Lucas and first records for the Central Cordillera.

RUFOUS-NAPED GREENLET *Hylophilus semibrunneus*
Fairly common at La Punta (1†), La Teta Resort, La Forzosa, and at Salazar (AMC) mostly in the midstorey to subcanopy in association with mixed species foraging flocks. Known from three localities in the Central Cordillera, the northernmost in Dpto Caldas, 250 km south of La Punta-3.

TAWNY-CROWNED GREENLET *Hylophilus ochraceiceps*
Captured at Alto de los Tarros (3, 1†). Previously known from the Pacific lowlands to the northern slope of the Western Cordillera. This record is an 80 km eastwards extension and first record for the Central Cordillera.

THREE-STRIPED WARBLER *Basileuterus tristriatus*
Commonly observed in the understorey to subcanopy in association with multi-species foraging flocks at La Punta (4, 2†) and La Teta Resort, representing a 140 km range extension from the Central Cordillera. Individuals in Serranía de San Lucas differ from *auricularis* subspecies of the three Colombian Cordilleras, with brighter and more extensive yellow underparts reminiscent of Santa Marta Warbler *B. basilicus*, and representing an undescribed subspecies (Fig. 3).

(ii) Thirty-one range extensions from the Central Cordillera to Serranía de San Lucas

The following species, predominantly distributed above 1,000 m asl, present range extensions of 140 km from the northern slope of the Central Cordillera to Serranía de San Lucas, based on distribution data in Hilty & Brown (1986). All of the following species were recorded for the first time in Serranía de San Lucas, having bridged the 70 km gap between the two ranges and extending a further 70 km across the Serranía to La Punta and La Teta Resort.

EARED DOVE *Zenaida auriculata* (San Pablo, La Teta Resort, and Apollo 13)

WHITE-COLLARED SWIFT *Streptoprocne zonaris* (*c.* 50 individuals, recorded at La Punta (2†) and La Teta Resort, roosted each evening underneath an enormous rock above a waterfall at La Punta).

ANDEAN EMERALD *Amazilia franciae* (La Punta (2), La Teta Resort (1†); also a range extension to the north of the Central Cordillera at Alto de los Tarros (1), and La Forzosa (1†))

GREEN-CROWNED BRILLIANT *Heliodoxa jacula* (La Punta (1†), La Teta Resort (4), also new records at La Forzosa (5, 1†), and at Salazar in July 2001 (AMC)).

COLLARED TROGON *Trogon collaris* (La Teta Resort (1); also at La Forzosa (1))

RED-HEADED BARBET *Eubucco bourcierrii* (La Punta; also La Forzosa)

CRIMSON-RUMPED TOUCANET *Aulacorhynchus haematopygus* (La Punta, La Teta Resort (1); also La Forzosa (1))

GOLDEN-OLIVE WOODPECKER *Piculus rubiginosus* (La Punta)

LINEATED FOLIAGE-GLEANER *Syndactila subalaris* (La Punta (1†) and also at La Forzosa (juvenile†))

BUFF-FRONTED FOLIAGE-GLEANER *Philydor rufus* (La Punta (1) and La Teta Resort (1))

STREAKED XENOPS *Xenops rutilans* (one observed at La Teta Resort)

BAR-CRESTED ANTSHRIKE *Thamnophilus multistriatus* (observed at San Pablo)

TAPACULO SP. *Scytalopus* (*femoralis*) *sp.* (suspected to be a species of this group heard singing at La Teta Resort)

WHITE-CROWNED MANAKIN *Pipra pipra* (San Pablo, La Punta (4), La Teta Resort; also La Forzosa (14))

GOLDEN-FACED TYRANNULET *Zimmerius viridiflavus* (La Punta, La Teta Resort (5); also Alto de los Tarros)

LESSER ELAENIA *Elaenia chiriquensis* (La Punta and La Teta Resort (1))

YELLOW-MARGINED FLYCATCHER *Tolmomyias assimilis* (La Teta Resort (1))

SCALE-CRESTED PYGMY-TYRANT *Lophotriccus pileatus* (La Punta (4), La Teta Resort; also La Forzosa)

BRAN-COLOURED FLYCATCHER *Myiophobus fasciatus* (La Punta and La Teta Resort (1))

BLACK PHOEBE *Sayornis nigricans* (La Punta)

GOLDEN-CROWNED FLYCATCHER *Myiodynastes chrysocephalus* (La Punta)

SLATE-THROATED GNATCATCHER *Polioptila schistaceigula* (La Teta Resort; also Alto de los Tarros)

SLATE-THROATED WHITESTART *Myioborus miniatus* (La Teta Resort (1) and Apollo 13 (5, 1†))

TROPICAL PARULA *Parula pitiayumi* (La Punta)

BLUE-HOODED EUPHONIA *Euphonia musica* (La Teta Resort)

ORANGE-BELLIED EUPHONIA *Euphonia xanthogaster* (La Teta Resort (1), also Alto de los Tarros and La Forzosa (3))

BLUE-NECKED TANAGER *Tangara cyanicollis* (La Punta and La Teta Resort (2))

CHESTNUT-CAPPED BRUSH-FINCH *Buarremon brunneinucha* (La Punta (5, 1†) and La Teta Resort)

BLACK-HEADED BRUSH-FINCH *Buarremon atricapillus* (La Punta at 1,000 m)

DULL-COLOURED GRASSQUIT *Tiaris obscura* (very common at La Punta and La Teta Resort (16)).

(iii) Six range extensions to the northeastern slope of the Central Cordillera; six species present small range extensions of 50 to 100 km to the northeastern slope of the Central Cordillera:

CHESTNUT WOOD-QUAIL *Odontophorus hyperythrus* (Observed and tape-recorded at La Forzosa, although unrecorded in Serranía de San Lucas where Marbled Wood-Quail *O. gujanensis* and Rufous-fronted Wood-Quail *O. erythrops* were both present between 1,000 and 1,400 m elevation at La Punta and La Teta Resort).

CHESTNUT-COLLARED SWIFT *Streptoprocne rutilla* (La Forzosa)

BROWN-BILLED SCYTHEBILL *Campylorhamphus pusillus* (La Forzosa (1))

GOLDEN-WINGED MANAKIN *Masius chrysopterus* (La Forzosa (2))

BARRED BECARD *Pachyramphus versicolor* (a pair observed at Alto de los Tarros)

YELLOW-THROATED BUSH-TANAGER *Chlorospingus flavigularis* (frequently seen and captured at La Forzosa (5, 1†))

(iv) Seventeen new locations for species with poorly-known distributions in northern Colombia; the following species are of particular interest as although known from records fairly close to our study sites (i.e. <100 km), they are known from only a handful of scattered records in northern Colombia:

FASCIATED TIGER-HERON *Tigrisoma fasciatum* (seen once in aquatic habitat at Apollo 13)

BLUE-KNOBBED CURASSOW *Crax alberti* (seen in captivity at Apollo 13; reported from local people at San Pablo and Alto de los Tarros)

LARGE-BILLED TERN *Phaetusa simplex* (common on Río Magdalena at San Pablo south to Barrancabermeja at least)

PLAIN-BREASTED GROUND-DOVE *Columbina minuta* (in secondary growth at Apollo 13)

VIOLACEOUS QUAIL-DOVE *Geotrygon violacea* (in forest at Apollo 13)

CHAPMAN'S SWIFT *Chaetura chapmani* (flocks in evening at La Punta and La Teta Resort)

SHORT-TAILED SWIFT *Chaetura brachyura* (common at La Punta and La Teta Resort)

LONG-TAILED WOODCREEPER *Deconychura longicauda* (several observed and heard calling at La Punta)

VERMILION FLYCATCHER (Apollo 13) *Pyrocephalus rubinus* and **PIRATIC FLYCATCHER** *Legatus leucophaius* (San Pablo, La Punta, Apollo 13) have presumably fairly recently colonised the region with deforestation.

BLUE COTINGA *Cotinga natterrerii* (Small flocks of 2-10 birds observed feeding on canopy fruits at La Punta, La Teta Resort and Alto de los Tarros.)

YELLOW-BROWED SHRIKE-VIREO *Vireolanius eximus* (individuals observed in the canopy at La Punta)

SLATE-COLOURED SEEDEATER *Sporophila schistacea* (fairly common at San Pablo, also common as a cage bird in region and a female collected at Apollo 13(1†)).

Additionally, **BARN OWL** *Tyto alba* was reliably reported as present by several local people around San Pablo, and would represent an important new record, if confirmed.

(v) Forty noteworthy altitude extensions; the maximum or minimum elevation for each species, based on data in Hilty & Brown (1986), is followed by the new altitude extension and the study site in parentheses. Elevations in parentheses after the Hilty & Brown elevation are from Ridgely & Greenfield (2001) which, although not specific to Colombia, contains the most recently published synopsis of species' elevational limits in the northern Andean region. Such values are not quoted where equal or where the species is not present in Ecuador.

WHITE HAWK *Leucopternis albicollis* from 1,400 [1,100] m to 1,550 m (La Forzosa).

BLACK HAWK-EAGLE *Spizaetus tyrannus* from 500 [1,000] m to 1,800 m (La Punta-1,400 m, La Teta Resort-1,200 m, La Forzosa-1,800 m).

RED-THROATED CARACARA *Daptrius americanus* from 1,400 [800] m to 1,800 m (La Forzosa).

MARBLED WOOD-QUAIL *Odontophorus gujanensis* from 1,200 [900] m to 1,400 m (La Punta).

RUFOUS-FRONTED WOOD-QUAIL *Odontophorus erythrops* from 1,100 [1,600] m to 1,400 m (La Punta and La Teta Resort).

SHORT-TAILED SWIFT *Chaetura brachyura* from 800 [700] m to 1,300 m (La Teta Resort).

WESTERN EMERALD *Chlorostilbon melanorhynchus* from 1,000 m to 1,400 m (La Punta).

BLACK-THROATED TROGON *Trogon rufus* from 1,100 [700] m to 1,400 m (La Punta).

BARRED PUFFBIRD *Nystalus radiatus* from 900 [1,000] m to 1,200 m (La Punta and La Teta Resort).

WHITE-NECKED PUFFBIRD *Notharchus macrorhynchus* from 500 [400] m to 700 m (Alto de los Tarros).

COLLARED ARAÇARI *Pteroglossus torquatus* from 800 m to 1,400 m (La Punta and La Teta Resort).

OLIVACEOUS WOODCREEPER *Sittasomus griseicapillus* from 1,000 [mostly below 1,100, although known from 1,700 – 2,000 m in south Ecuador] to 1,800 m by AMC (La Punta (3), La Teta Resort (1), La Forzosa 1,800 m (4)).

NORTHERN BARRED WOODCREEPER *Dendrocolaptes sanctithomae* from 900 [800] m to 1,200 m (La Punta and La Teta Resort).

WESTERN WOODHAUNTER *Hyloctistes virgatus* from 900 [1,100] m to 1,700 m (La Forzosa (2, 1†).

SLATY-WINGED FOLIAGE-GLEANER *Philydor fuscipennis* from 1,200 [600] m to 1,400 m (La Punta (3) and La Teta Resort (1).

BUFF-FRONTED FOLIAGE-GLEANER *Philydor rufus* from 900 [600] m down to 700 m (Alto de los Tarros (1†)).

BUFF-THROATED FOLIAGE-GLEANER *Automolus ochrolaemus* from 1,200 [800] m to 1,400 m (Alto de los Tarros (3, 1†)).

STREAKED XENOPS *Xenops rutilans* from 1,500 m down to 1,200 m (La Teta Resort) (although note this is a lowland species (to sea level) in western Ecuador).

FASCIATED ANTSHRIKE *Cymbilaimus lineatus* from 900 [1,000] m to 1,400 m (La Punta).

BAR-CRESTED ANTSHRIKE *Thamnophilus multistriatus* from 900 m (250 m on Pacific slope) down to 250 m (San Pablo).

WESTERN SLATY ANTSHRIKE *Thamnophilus atrinucha* from 500 [1,100] m to 1,500 m (Apollo 13, Alto de los Tarros (1), and La Forzosa).

GOLDEN-HEADED MANAKIN *Pipra erythrocephala* from 500 [600] m to 1,200 m (La Teta Resort (1), Apollo 13 (82, 5†), Alto de los Tarros (58)) (note this species was recently captured at 1,400 m in the eastern Cordillera (Salaman *et al.* in press) and 1,300 m at Serranía de las Quinchas in the Magdalena valley (F.G. Stiles *in litt.*).

WHITE-CROWNED MANAKIN *Pipra pipra* from 600 [500] m down to 100 m (San Pablo).

BLUE COTINGA *Cotinga nattererii* from 1,000 [300] m to 1,400 m (La Punta).

YELLOW-MARGINED FLYCATCHER *Tolmomyias assimilis* from 800 [500] m to 1,200 m (La Teta Resort (1)).

TROPICAL PEWEE *Contopus cinereus* from 1,000 m [wanders higher] to 1,400 m (La Punta and La Teta Resort (4)).

RUFOUS MOURNER *Rhytipterna holerythra* from 1,000 [700] m to 1,400 m (La Teta Resort (1), Apollo 13 (1†), and Serranía de las Quinchas in the Magdalena valley (F.G. Stiles *in litt.*)).

PALE-EDGED FLYCATCHER *Myiarchus cephalotes* from 1,500 [1,000] m down to 700 m (Alto de los Tarros).

SOCIAL FLYCATCHER *Myiozetetes similis* from 900 m (1,200 m on Andean East slope) to 1,400 m (La Punta).

WHITE-BREASTED WOOD-WREN *Henicorhina leucosticta* from 1,000 m to 1,400 m (La Punta (1†)).

SOUTHERN NIGHTINGALE WREN *Microcerculus marginatus* from 1,200 [700] m to 1,400 m (La Punta (1)).

SLATE-THROATED GNATCATCHER *Polioptila schistaceigula* from 1,000 [750] m to 1,200 m (La Teta Resort).

CHESTNUT-HEADED OROPENDOLA *Psarocolius wagleri* from 1,000 [700] m to 1,300 m (La Teta Resort).

ORANGE-CROWNED ORIOLE *Icterus auricapillus* from 800 m to 1,200 m (La Teta Resort (1)).

BLUE-HOODED EUPHONIA *Euphonia musica* from 1,400 m down to 1,200 m (La Teta Resort).

SOOTY ANT-TANAGER *Habia gutturalis* from 1,100 m to 1,400 m (La Punta (4)).

LARGE-BILLED SEEDFINCH *Oryzoborus crassirostris* from 1,000 [700] m to 1,400 m (La Punta (1) and La Teta Resort (21)).

Discussion

A total of 449 bird species were recorded in 37 days at the six study sites, including 374 species recorded across Serranía de San Lucas. Of 199 species recorded at the two subtropical study sites (La Punta & La Teta Resort) in Serranía de San Lucas, 70% represent range extensions above 1,000 m (based on Hilty & Brown 1986), of which 65 species are significant new records detailed in this article. Full details of the birds recorded during fieldwork, including a checklist for study sites and accounts of 11 threatened and near-threatened species recorded (e.g. White-mantled Barbet *Capito hypoleucus*), is being published elsewhere.

The premontane avifauna properties of San Lucas (La Punta & La Teta Resort) are influenced by two principal ecoregions:

i) approximately one third of the avifauna are highland species that originate from the Central Cordillera, of which the majority reported here are significant range extensions,

ii) the highest proportion of avifauna in the premontane zone of the eastern slope is influenced by foothill and lowland species from the northern Colombian plain, and account for the extraordinary number (34 of 40) of altitude extensions, also suggesting that many higher elevation species remain to be recorded or may be missing,

iii) several notable easterly range extensions crossing the Río Cauca from the humid Pacific and northern slopes of the Western Cordillera (Apollo 13 & Alto de los Tarros).

Range extensions in the Central Cordillera are largely influenced by northwards extension of lower montane species up the Cordillera to previously little known and isolated highland areas (La Forzosa).

We will continue surveys at higher elevations of Serranía de San Lucas where the avifauna undoubtedly will be more “unique”, with anticipated high levels of endemism at the subspecies and species level and stronger biological affiliations to the High Andes. However, as security problems continue to mount in the region, additional fieldwork remains extremely complicated, so we feel that it is important to place our observations to date on record at this time. We also hope that these new data will help draw attention to the importance of Serranía de San Lucas and direct conservation efforts to this critically important and enigmatic region of Colombia.

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Pneumaticity of the dorsal foramen and dorsal sulcus of the sternum in Australasian Passeriformes

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The Passeriformes comprise almost 60% of the 9,000-10,000 recent species of birds (Bock & Farrand 1980, Sibley & Monroe 1990). Songbirds are more widely distributed than any other avian order but aspects of their intra-ordinal classification remain unsettled. Avian systematics have been revitalized in recent years with the increased use of molecular and biochemical techniques (e.g. Christidis & Schodde 1991, Sibley & Ahlquist 1985, 1990). In particular, the classification of the Passeriformes has undergone substantial reorganization (e.g. Sibley & Ahlquist 1985, 1990, Helm-Bychowski & Cracraft 1993; Barker *et al.* 2002; Ericson *et al.* 2002). Members of the Passeriformes share a strikingly similar osteological morphology and the identification of subordinal taxa is purportedly extremely difficult, if not impossible, because of this similarity (Olson 1985). Few characters of the post-cranial skeleton have been studied in any depth; the best known is the pneumotricipital fossa of the humerus (Bock 1962). Here, an osteological character of the sternum is surveyed and the distribution of its character states examined in light of proposed relationships within the Australasian Passeriformes.

Methods

This study focuses on the dorsal pneumatic foramen and dorsal sulcus of the sternum (termed by Baumel & Witmer (1993) as foramen pneumaticum and sulcus medianus sterni, respectively). The sulcus runs anteroposteriorly (craniocaudally) along the midline of the dorsal (visceral) surface of the sternum. The pneumatic foramen lies at the anterior (cranial) end of the sulcus. It may be absent (Fig. 1a). When present, there may be considerable variation in its appearance, from a single and distinct foramen (Fig. 1b) to a group of foramina varying in size (Fig. 1c-e). Smaller foramina may occur around the dorsal foramen area or extend posteriorly from the main dorsal foramen area along the dorsal sulcus, approaching the posterior margin of the sternum (Fig. 1d-e). These are all scored as 'present'.

For the purposes of the following discussion, taxonomic divisions of the Passeriformes above the family level, and their sequence, follow Sibley & Monroe (1990). The sequence and delimitation of Australian families are after Christidis & Boles (1994), as are the names of genera and species. For New Guinea and New Zealand taxa, names follow Beehler & Finch (1985) and OSNZ (1990), respectively.

Sterna were examined from the avian skeleton collections of the Australian Museum, Sydney; Australian National Wildlife Collection, CSIRO Division of

Sustainable Ecosystems, Canberra; Museum Victoria, Melbourne; South Australian Museum, Adelaide; Queensland Museum, Brisbane; Queen Victoria Museum, Launceston; and Museum of New Zealand Te Papa Tongarewa, Wellington. For most species, 1-3 specimens were examined. Greater numbers of Australasian robins (Petroicidae) were available because they had been borrowed for another project. In total, 795 specimens of 268 species of Passeriformes were examined. Representatives of the Piciformes and Coraciiformes were also examined as possible outgroups to determine which character state might be ancestral.

Results

The taxa, number of specimens examined and observed character states are given in Table 1. In representatives of three families of the Piciformes, there was a particular form of the present character state with no distinct pneumatic dorsal foramen; however, small foramina occurred along the caudal half of the dorsal sulcus. This was scored as present. In five families of the Coraciiformes, the pneumatic dorsal foramen and foramina were present in all but a single cerylid kingfisher and one of four alcedinid kingfishers.

Only three families of suboscines (Suborder Tyranni) were examined, the Australian Pittidae, New Zealand Acanthisittidae and non-Australasian Tyrannidae, representing the three infraorders recognised by Sibley & Monroe (1990). Other than one individual of *Pitta*, all specimens of Pittidae and Tyrannidae were scored as ‘present’; foramina were absent in three specimens of Acanthisittidae.

In the Suborder Passeri (oscines), in most superfamilies one or both character states can be found, although these show pronounced segregation between families.

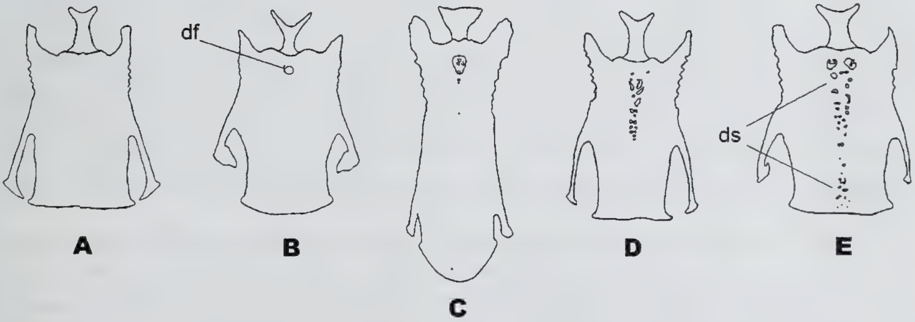

Figure 1: Character states of the dorsal pneumatic foramen and dorsal sulcus of the sternum of Passeriformes. A. Dorsal foramen and accompanying foramina absent (Passeridae: *Passer domesticus*). B-E. Dorsal foramen present, showing extreme and intermediate states of accompanying foramina surrounding the foramen and extending caudally along the dorsal sulcus: B. Pittidae: *Pitta versicolor*; C. Menuridae: *Menura novaehollandiae*; D. Meliphagidae: *Phylidonyris nigra*; E. Pachycephalidae: *Pachycephala simplex*. df = dorsal foramen, ds = dorsal sulcus.

Within the Parvorder Corvida, the Superfamily Menuroidea has the present state in all specimens of the lyrebirds (Menuridae) and bowerbirds (Ptilonorhynchidae), but the absent state in all treecreepers (Climacteridae). A similar disparity is found in the Meliphagoidea. The fairy-wrens (Maluridae) and pardalotes and acanthizid warblers (Pardalotidae) invariably lack any dorsal foramina whereas, other than a few individuals, all honeyeaters and chats (Meliphagidae) have the present character state.

The greatest amount of variation within any Superfamily occurred in the Corvoidea. The presence of a pneumatic dorsal foramen and in some cases a pneumatic dorsal sulcus is most consistently seen in this Superfamily (there were odd individuals lacking this state). This pneumaticity is absent in the logrunners (Orthonychidae), Australo-Papuan babblers (Pomatostomidae) and sittellas (Neosittidae). There were differences between genera in the whipbirds and quail-thrushes (Eupetidae = Cinclosomatidae), whistlers and shrike-thrushes (Pachycephalidae), mudnest builders (Corcoracidae) and New Zealand wattlebirds (Callaeatidae). There was considerable variation both within and between species of the Australasian robins (Petroicidae) and cuckoo-shrikes (Campephagidae).

Variation was minor within the Parvorder Passerida. In the three superfamilies Muscicapoidea, Sylvioidea and Fringilloidea, a sternal foramen was absent, with few exceptions, most of which (6 of 10) were restricted to just three families (Alaudidae, Pycnonotidae, Passeridae).

Discussion

Both the Coraciiformes and Piciformes have sterna with pneumatic foramina. While the Coraciiformes exhibit the general corvoid condition, the condition of this character in the Piciformes differs from that of any of the Passeriformes by lacking a distinct anterior dorsal foramen or foramina. Recent molecular studies have cast doubts on the traditional association of these orders with the Passeriformes (e.g. Sibley & Ahlquist 1990, Mindell *et al.* 1997). It is not currently possible to assess the polarity of the character states. Because it is not known which state is derived, this character cannot be used for decisions about relationships at this time. Nonetheless, some comments can be made about the distribution of these states in light of findings of other authors.

The position of the Acanthisittidae relative to the remainder of the Passeriformes is not settled. Although placed within the Tyranni by Sibley & Monroe (1990), the marked segregation of character states between this family and the other infraorders of suboscines is consistent with the more trenchant differences found by Ericson *et al.* (2002), who placed this family as the sister-group to all other Passeriformes.

As with the pneumotricipital fossa, members of suborders, parvorders, superfamilies and families are generally characterized by a particular state, but there are exceptions. The presence of the sternal pneumatic fossa is the largely predominant state in two infraorders of the suboscines and the subfamilies Corvinae and Dicrurinae

TABLE 1

Distribution of character states (absent or present) of dorsal pneumatic foramina in Australasian Passeriformes together with selected Piciformes and Coraciiformes. Sequence and nomenclature of families generally follows Christidis & Boles (1994), with higher taxonomic divisions following Sibley & Monroe (1990); genera and species are arranged alphabetically within families or subfamilies. The figures following each species' name indicate the number of specimens that exhibited each character state for each taxon (absent/present).

Order Piciformes (0/13)

Picidae (0/11): *Colaptes auratus* (0/8); *Dendrocopos major* (0/1); *Melanerpes erythrocephalus* (0/1); *Picus viridis* (0/1)

Lybiidae (0/1): *Tricholaema diademata* (0/1)

Ramphastidae (0/1): *Ramphastos toco* (0/1)

Order Coraciiformes (2/33)

Coraciidae (0/4): *Euystomus orientalis* (0/4)

Alcedinidae (1/6): *Alcedo atthis* (0/2); *A. azurea* (1/4)

Halcyonidae (0/21): *Dacelo leachii* (0/1); *D. novaeguineae* (0/7); *Tanysiptera sylvia* (0/1); *Todirhamphus macleayii* (0/4); *T. sanctus* (0/6); *Syma torotoro* (0/1); *S. megarhyncha* (0/1)

Cerylidae (1/0): *Megaceryle alcyon* (1/0)

Meropidae (0/2): *Merops ornatus* (0/2)

Order Passeriformes (336/474)

Suborder Tyranni (4/11)

Infraorder Acanthisittides (3/0)

Acanthisittidae (0/3): *Acanthisitta chloris* (1/0); *X. gilvivenris* (1/0); *Xenicus longipes* (1/0)

Infraorder Eurylaimides (1/7)

Pittidae (1/7): *Pitta erythrogaster* (1/0); *P. versicolor* (0/7)

Infraorder Tyrannides (0/4)

Tyrannidae (0/4): *Contopus sordidulus* (0/1); *Empidonax difficilis* (0/1); *Tyrannus tyrannus* (0/1), *T. verticalis* (0/1)

Suborder Passeres (332/463)

Parvorder Corvida (219/453)

Superfamily Menuroidea (13/5)

Menuridae (0/5): *Menura alberti* (0/1); *M. novaehollandiae* (0/4)

Climacteridae (13/0): *Climacteris erythrops* (1/0); *C. melanura* (1/0); *C. picumnus* (6/0); *Cormobates leucophaeus* (4/0); *C. placens* (1/0)

Superfamily Meliphagoidea (102/126)

Maluridae (21/0): *Amytornis dorotheae* (3/0); *A. woodwardi* (2/0); *Malurus cyaneus* (7/0); *M. cyanocephala* (1/0); *M. lamberti* (6/0); *Stipiturus malachurus* (2/0)

Pardalotidae: Pardalotinae (7/0): *Pardalotus punctatus* (1/0); *P. striatus* (6/0);

Pardalotidae: Dasyornithinae (3/0): *Dasyornis brachypterus* (3/0)

Pardalotidae: Acanthizinae (66/0): *Acanthiza apicalis* (2/0); *A. chrysorrhoa* (2/0); *A. lineata* (6/0); *A. nana* (2/0); *A. pusilla* (6/0); *A. reguloides* (1/0); *A. uropygialis* (5/0); *Aphelocephala leucopsis* (2/0); *Chthonicola sagittata* (5/0); *Crateroscelis robusta* (1/0); *Gerygone chloronotus* (1/0); *G. fusca* (4/0); *G. levigaster* (1/0); *G. magnirostris* (1/0); *G. mouki* (2/0); *G. olivacea* (2/0); *G. palpebrosa* (1/0); *Hylacola cauta* (1/0); *H. pyrrhopygia* (2/0); *Origma solitaria* (2/0); *Pycnoptilus floccosus* (1/0); *Pyrrholaemus brunneus* (1/0); *Sericornis citreogularis* (3/0); *S. frontalis* (5/0); *S. magnirostris* (6/0); *Smicrornis brevirostris* (1/0)

Meliphagidae: Meliphaginae (5/122): *Acanthagenys rufogularis* (0/4); *Acanthorhynchus tenuirostris* (1/4); *Anthochaera carunculata* (0/4); *A. chrysoptera* (0/2); *A. c. lunulata* (0/1); *Anthornis melanura* (1/1); *Certhionyx niger* (0/1); *C. pectoralis* (0/2); *C. variegatus* (0/1); *Conopophila albogularis* (0/1); *C. rufogularis* (0/1); *C. whitei* (0/1); *Entomyzon cyanotis* (0/3); *Grantiella picta* (0/1); *Lichenostomus chrysops* (1/3); *L. cratitius* (0/2); *L. frenatus* (0/2); *L. flavescens* (0/3); *L. hindwoodi* (1/2); *L. keartlandi* (0/2); *L. leucotis* (0/2); *L. ornatus* (0/2); *L. penicillatus* (0/10); *L. plumulus* (0/1); *L. unicolor* (0/1); *L. virescens* (0/1); *Lichmera indistincta* (0/2); *Manorina flavigula* (0/1); *M. melanocephala* (0/6); *M. melanophrys* (0/3); *Melidectes torquatus* (0/1); *Melilestes megarhyncha* (0/1); *Meliphaga gracilis* (0/1); *M. lewinii* (0/2); *M. notata* (0/2); *Melipotes fumigatus* (0/1); *Melithreptus brevirostris* (0/2); *M. gularis laetior* (0/1); *M. lunatus* (0/2); *Myzomela erythrocephala* (0/1); *M. obscura* (0/3); *M. sanguinolenta* (0/2); *Notiomystis cincta* (1/0); *Oedistoma iliolophus* (0/1); *Philemon argenticeps* (0/1); *P. buceroides* (0/3); *P. citreogularis* (0/3); *P. corniculatus* (0/4); *P. diemenensis* (0/1); *Phylidonyris albifrons* (0/1); *P. melanops* (0/1); *P. nigra* (0/1); *P. novaehollandies* (0/2); *Plectorhyncha lanceolata* (0/1); *Prosthemadera novaeseelandiae* (0/2); *Ptiliprora guisei* (0/1); *Ramsayornis fasciatus* (0/1); *R. modestus* (0/1); *Trichodere cockerelli* (0/1); *Xanthomyza phrygia* (0/7); *Xanthotis flaviventer* (0/1)

Meliphagidae: Epthianurinae (0/4): *Ashbyia lovensis* (0/2); *Epthianura albifrons* (0/1); *E. tricolor* (0/1);

Superfamily Corvoidea (104/322)

Petroicidae (65/131): *Amalocichla incerta* (2/0); *Drymodes brunneopygia* (1/17); *D. superciliaris* (0/1); *Eopsaltria australis* (10/12); *E. georgiana* (0/5); *E. griseogularis* (1/3); *E. pulverulenta* (0/2); *Heteromyias albispecularis* (1/1); *H. cinereifrons* (0/1); *Melanodryas cucullata* (1/13); *M. vittata* (1/2); *Microeca fascinans* (1/8); *M. flavigaster* (0/4); *M. flavovirescens* (0/3); *M. papuana* (0/3); *Monachella muelleriana* (0/1); *Pachycephalopsis polisoma* (0/3); *Peneothello cyanus* (0/5); *P. sigillatus* (0/1); *Petroica australis* (0/5); *P. goodenovii* (4/17); *P. macrocephala* (0/2); *P. multicolor* (11/4); *P. phoenicea* (14/1); *P. rodinogaster* (2/1); *P. rosea* (9/1); *Poecilodryas albonotata* (0/3); *P. placens* (0/1); *P. superciliosa* (0/3); *P. s. cerviniventris* (0/2); *Tregellasia leucops* (3/3); *T. capito* (4/3)

Orthonychidae (5/0): *Orthonyx spaldingii* (1/0); *O. temminckii* (4/0)

Pomatostomidae (8/0): *Pomatostomus halli* (1/0); *P. ruficeps* (2/0); *P. superciliosus* (2/0); *P. temporalis* (3/0);

Eupetidae (2/2): *Cinclosoma punctatum* (0/2); *Psophodes cristatus* (1/0); *P. olivaceus* (1/0)

Neosittidae (5/0): *Daphoenositta chrysoptera* (5/0)

Pachycephalidae (4/33): *Colluricincla harmonica* (1/5); *C. megarhyncha* (0/3); *C. woodwardi* (0/3); *Falcunculus frontatus* (0/2); *Mohoua albicilla* (1/0), *M. novaeseelandiae* (1/0), *M. ochrocephala* (1/0); *Pachycephala inornata* (0/1); *P. lanioides* (0/1); *P. olivacea* (0/3); *P. pectoralis* (0/7); *P. rufiventris* (0/4); *P. simplex* (0/2); *Pitohui nigrescens* (0/1); *Rhagologus leucostigma* (0/1)

incertae cedis (0/3): *Turnagra capensis* (0/3)

Dicruridae: Monarchinae (1/20): *Arses telescophthalmus* (0/1); *Clytorhynchus pachycephaloides* (0/1); *Machaerirhynchus flaviventer* (1/0); *Monarcha leucotis* (0/1); *M. melanopsis* (0/4); *M. trivirgatus* (0/4); *Myiagra alecto* (0/3); *M. cyanoleuca* (0/1); *M. inquieta* (0/2); *M. i. nana* (0/2); *M. rubecula* (0/1)

Dicruridae: Rhipidurinae (0/33): *Rhipidura fuliginosa* (0/10); *Rhipidura leucophrys* (0/10); *R. rufifrons* (0/10); *R. r. dryas* (0/2); *R. rufiventris* (0/1)

Dicruridae: Grallininae (0/6): *Grallina bruijni* (0/1); *G. cyanoleuca* (0/5)

Dicruridae: Dicrurinae (0/2): *Dicrurus bracteatus* (0/2)

Campephagidae (4/7): *Coracina lineata* (1/0); *C. novaehollandiae* (3/0); *C. papuensis* (0/2); *C. tenuirostris* (0/1); *Lalage leucomela* (0/2); *L. sueurii* (0/2)

Oriolidae (0/11): *Oriolus sagittatus* (0/3); *O. flavocinctus* (0/2); *Sphecotheres viridis* (0/6)

Artamidae: Artaminae (0/14): *Artamus cyanopterus* (0/3); *A. leucorhynchus* (0/2); *A. minor* (0/2); *A. personatus* (0/3); *A. superciliosus* (0/4)

Artamidae: Cracticinae (0/14): *Cracticus nigrogularis* (0/2); *C. torquatus* (0/2); *Gymnorhina tibicen* (0/2); *Strepera graculina* (0/8)

Artamidae: Peltopsinae (0/1): *Peltops montanus* (0/1)

Paradisaeidae (2/7): *Cicinnurus regius* (0/1); *Epimachus meyeri* (0/1); *Lophorhina superba* (0/1); *Manucodia comrii* (2/0); *M. keraudrenii* (0/1); *Parotia lawesi* (0/1); *Ptiloris magnificus* (0/1); *P. victoriae* (0/1)

Corvidae (0/9): *Corvus bennetti* (0/5); *C. coronoides* (0/2); *C. mellori* (0/1); *C. orru* (0/1)

Corcoracidae (2/6): *Corcorax melanorhamphos* (2/0); *Struthidea cinerea* (0/6)

Ptilonorhynchidae (0/22): *Ailuroedus crassirostris* (0/3); *A. melanotis* (0/1); *Amblyornis subalaris* (0/1); *Chlamydera cerviniventris* (0/1); *C. maculata* (0/3); *C. nuchalis* (0/1); *Prionodura newtoniana* (0/1); *Ptilonorhynchus violaceus* (0/4); *Scenopoeetes dentirostris* (0/1); *Sericulus chrysocephalus* (0/6)

Callaeatidae (6/1): *Callaeas cinerea* (4/0); *Philesturnus carunculatus* (2/0); *Heterolocha acutirostris* (0/1)

Parvorder Passerida (113/10)

Superfamily Fringilloidea (55/6)

Alaudidae (0/3): *Alauda arvensis* (0/2); *Mirafra javanica* (0/1)

Motacillidae (2/1): *Anthus novaeseelandiae* (0/1); *Motacilla alba* (2/0)

Passeridae: Passerinae (4/0): *Passer domesticus* (4/0)

Passeridae: Estrildinae (28/1): *Emblema pictum* (1/0); *Erythrura gouldiae* (1/0); *E. trichroa* (2/0); *Heteromunia pectoralis* (1/0); *Lonchura castaneothorax* (0/1); *L. oryzivora* (1/0); *Neochmia phaeton* (1/0); *N. ruficauda* (3/0); *N. temporalis* (2/0); *Poephila acuticauda* (3/0); *P. cincta* (3/0); *P. personata* (2/0); *Stagonopleura bella* (2/0); *S. guttata* (2/0); *Taeniopygia bichenovii* (2/0); *T. guttata* (2/0)

Fringillidae (6/1): *Carduelis carduelis* (3/0); *C. tristis* (3/0); *Fringilla coelebs* (0/1)

Emberizinae (2/0): *Emberiza calandra* (1/0); *E. citrinella* (1/0)

Nectarinidae (1/0): *Nectarinia jugularis* (1/0)

Dicaeidae (4/0): *Dicaeum hirundinaceum* (1/0); *Melanocharis niger* (1/0); *Oreocharis arfaki* (1/0); *Rhamphomantis crassirostris* (1/0)

Superfamily Sylvioidea (33/2)

Hirundinidae (11/0): *Hirundo ariel* (4/0); *H. neoxena* (6/0); *H. nigricans* (1/0)

Pycnonotidae (0/2): ***Pycnonotus jocosus* (0/2)**

Sylviidae (13/0): *Acrocephalus stentoreus* (1/0); *Cincloramphus cruralis* (2/0); *C. mathewsi* (3/0); *Cisticola exilis* (2/0); *Eremiornis carteri* (2/0); *Megalurus gramineus* (1/0); *M.* (*Bowdleria*) *punctata* (1/0); *M. timoriensis* (2/0)

Zosteropidae (9/0): *Zosterops lateralis* (6/0); *Z. luteus* (2/0); *Z. strenuus* (1/0)

Superfamily Muscicapoidea (25/2)

Muscicapidae (13/0): *Turdus merula* (2/0); *T. philomelos* (2/0); *T. poliocephalus* (3/0); *Zoothera lunulata* (6/0);

Sturnidae (12/2): *Acridotheres tristis* (2/0); *Aplonis cantaroides* (1/0); *A. fusca* (4/0); *A. metallica* (0/2); *Sturnus vulgaris* (5/0) of the Corvidae *sensu* Sibley & Ahlquist (1990) and Sibley & Monroe (1990). In this, it parallels the distribution of a single pneumotricipital fossa in these groups. This contrasts with the Passerida, in which the predominant states are the absence of a sternal pneumatic fossa and the presence of a double pneumotricipital fossa.

This segregation of character states between the Corvida and Passerida is marked, but not absolute, and there are some intriguing discrepancies, particularly in the former group. In the Menuroidea, the treecreepers are conspicuous by lacking the sternal fossa. The placement of these birds in this superfamily has been problematic, and Sibley & Ahlquist (1990), who proposed it, nonetheless expressed doubts about this action. Within the Meliphagoidea, there is a distinct division between the Pardalotidae (including the Acanthizinae) and Maluridae on one hand, and the Meliphagidae on the other. The presence of pneumatic foramina in the chats (*Epthianura*, *Ashbyia*) supports their association with the honeyeaters rather than the acanthizid warblers (Christidis *et al.* 1993).

There is no obvious pattern in the distribution of character states within the Corvoidea, other than the apparent correlation between this character and the pneumotricipital fossa, mentioned above. The placement of the *Mohoua* in the Pachycephalidae (Keast 1977, Sibley & Ahlquist 1987) has been challenged (Olson 1990a). The absence of sternal pneumatisation in the three species of *Mohoua* contrasts with the presence state in all but one of the other pachycephalid specimens examined. The taxonomic placement of *Turnagra* remains unresolved (e.g. Christidis *et al.* 1996). Because this genus shares the presence of pneumatic foramina with the families with which it has been associated (Ptilonorhynchidae/Paradisaeidae, e.g. Olson *et al.* 1983, Christidis *et al.* 1996, Pachycephalidae, e.g. Mayr 1967), this character adds no support for either alternative.

The Passerida exhibit a greater uniformity than the Corvoidea, with the character state 'absent' being found in all but a few of the sampled taxa. These species are unequivocally placed in the Passerida by molecular studies. The bulbuls also differ from the 'normal' condition of the Passerida by having a single pneumotricipital fossa (Olson 1990b). (It is notable that the waxwings, Bombycillidae, whose placement in the Passerida has never been questioned, also have a single pneumotricipital fossa (Bock 1962) and prominent pneumatic foramen of the sternum (pers. obs.)).

It is possible that, because most of the sample sizes are small, these may not accurately reflect the amount of variation within a species. In the robins (Petroicidae), for which sample sizes were considerably larger, the occurrence in a species of both character states was more widespread. This could be a property of this family, however, as they also have a range of intermediate states in the pneumotricipital fossa (pers. obs.).

The range of variation encompassed by the state 'present' is quite broad (Fig 1b-e), and it is likely that it will be possible to subdivide it into two or more states. Although the expression of this character may be related to age, no obvious relationship was discerned between the maturity of the bird (as indicated by degree of cranial pneumatisation) and the character state. In specimens of Eastern Yellow Robin *Eopsaltria australis*, the character states were about evenly distributed between birds with unpneumatised and fully pneumatised skulls.

This character invites further study. At present, it must be considered just one character that can be used in concert with others, but is by itself an insufficient basis on which to make taxonomic decisions. It may be usefully re-evaluated in light of more recent modifications of passerine phylogeny (e.g. Barker *et al.* 2002; Ericson *et al.* 2002).

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A newly discovered paralectotype of *Pteroptochos megapodius* Kittlitz, 1830

by F. D. Steinheimer

Received 14 December 2001

In 1834, John Edward Gray (1800-1875) of the British Museum, now The Natural History Museum (BMNH), started an extended exchange with Eduard Rüppell (1794-1884) from Frankfurt am Main receiving at least 20 of Rüppell's Abyssinian types (Rüppell 1835-40, 1845) (Steinheimer, in press).

Among the BMNH Rüppell specimens is also a single bird from Chile, a Moustached Turca *Pteroptochos megapodius* (BMNH reg. no. 1842.8.16.27), which was the first of this species to reach the BMNH. No entry for this specimen was found in the old BMNH Vellum catalogues, where many of Rüppell's birds were listed, showing that the specimen had been received as part of a later exchange between 1837 and 1842 (Knox & Walters 1992).

As Rüppell never went to Chile, this early Chilean specimen in Rüppell's museum at Frankfurt probably came from Baron Friedrich Heinrich von Kittlitz (1799-1874), whose Chilean collection (March-April 1827) went partly to Frankfurt (Steinbacher 1954), but also to Berlin and St. Petersburg. This specimen is unlikely to have been part of the collection of another German, Eduard Friedrich Pöppig (1798-1868), who collected in South America during 1827-1832 (Morawetz & Röser 1998), since no Pöppig specimens have been found at Frankfurt (Gerald Mayr, *in litt.* 2001). Except for another Kittlitz specimen, all other *Pteroptochos megapodius* at Frankfurt museum were collected later than the 1850s. The BMNH specimen must therefore be one of the unknown number of former syntypes, now paralectotype by designation of Chrostowski 1921, of *Pteroptochos megapodius* Kittlitz, 1830, and the only recorded skin of this collector at the BMNH. The specimen is a study skin, i.e. it was never mounted, with the following data: "*Chili, Dr. Rüppell*" [exact locality: Valparaiso], and it fits very well with Kittlitz's (1830) description (pp. 182-183), measurements and illustration (plate IV). Other specimens are at Frankfurt (paralectotype SMF 16726, Chili, 28 March 1827, Steinbacher 1954) and St. Petersburg Museum (4 paralectotypes, 1 lectotype labelled "*No. 28[a] Pteroptochos Megapodius Kittl. Chili v. Kittlitz*", Chrostowski 1921).

In addition to this skin, The Natural History Museum holds further skeletal material from Kittlitz's collection. In 1850, the BMNH obtained 38 skeletons of Chilean birds (BMNH 1850.11.14.1-38; not 81 Chilean skeletons as listed in Sharpe 1906; the other skeletons are from other localities), including *Pteroptochos megapodius*, from Johann Georg Wilhelm Brandt (1794–1856), relative of Prof. Dr. Johann Friedrich von Brandt (1802–1879) of the Imperial Museum, St. Petersburg (Sharpe 1906, Gebhardt 1964, 1970). Most of Kittlitz's material was given to the St. Petersburg Museum and these very early skeletons of Chilean birds were again probably collected by Kittlitz; thus the skeleton of *Pteroptochos megapodius* derives from the same series as the type specimens.

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First confirmed record of *Agyrtria versicolor* (Trochilidae) for Peru

by André-A. Weller

Received 27 December 2001

Among the five species of the Neotropical hummingbird genus *Agyrtria* endemic to South America (Weller 1998, 1999; formerly included in *Amazilia*), the Versicolored Emerald *A. versicolor* has the widest geographical distribution, ranging from the lowlands of southern Venezuela and eastern Colombia southward to north-eastern Argentina (Misiones) and south-eastern Brazil (Meyer de Schauensee & Phelps 1978, Hilty & Brown 1986, Sick 1993). Five subspecies are currently recognized (Weller 1999; Fig. 1): *A. v. milleri* (Venezuela south of Río Orinoco, C Colombia, NE Peru, N Brazil), *A. v. hollandi* (SE Venezuela, W Guyana), *A. v. nitidifrons* (NE Brazil), *A. v. kubtcheki* (interior S Brazil, C Paraguay, NE Argentina), and *A. v. versicolor* (SE Brazil). The closely related taxon *A. rondoniae*, known only from the upper Río Madeira (W Brazil to NE Bolivia), is considered specifically distinct (Weller 1999), based on reported sympatry with *A. versicolor* (Ruschi 1982), contrary to Sick (1993) who suggested it was a subspecies of the latter.

A. v. milleri is the most widespread subspecies, being mainly restricted to the basins of the Orinoco and Amazon and their tributaries (Fig. 1). The western distributional limits were considered to be in central Colombia, where the taxon has been recorded from Arauca and Meta southward to Caquetá (Nicéforo & Olivares 1967, Hilty & Brown 1986; specimen data). Moreover, a number of specimens are known from the "Bogotá collections", but it may be reasonably presumed that these birds were actually collected in the region east of the Andes because the taxon is absent from the western slope of the Cordillera Oriental and from all other mountain ranges belonging to the northern Andes (see also Berlioz & Jouanin 1944). The same applies to records from Mérida, Venezuela (e.g., SMF 80554; see also Hartert 1900), this place representing most likely another commercial trading place, while specimens actually came from the trans-Andean lowlands.

In the south-west of the taxon's range, no confirmation (but see Weller 1999) exists for Peru since Zimmer (1950) questioned a record from Iquitos, uppermost Río Amazon, mentioned by Simon (1910). Unfortunately, the latter provided no further comments on this locality and later even excluded Peru from the range of *milleri* (Simon 1921). Other authors such as Taczanowski (1884), Hartert (1900), Peters (1945) and, more recently, Parker *et al.* (1982) and Ruschi (1986) did not mention a Peruvian record of *A. versicolor*.

There is, however, a confirmed record of *A. v. milleri* from Iquitos. This is based on an apparently overlooked specimen deposited in the bird collection of the Forschungsinstitut Senckenberg, Frankfurt/Main (SMF 80523). According to the original label, it was obtained in August 1885 by H. v. Berlepsch and collected in "N.O. (= northeastern) Peru: Yquitos, Amaz. sup." on 6 (?) May 1878 by H. Whitely. Since Hellmayr (1910) and Stephens & Traylor (1983) indicated that Whitely conducted field work in the Iquitos region between April and September 1878, little doubts exist about the origin of this specimen. Hence Iquitos (Loreto, 106 m, 03°46′S,

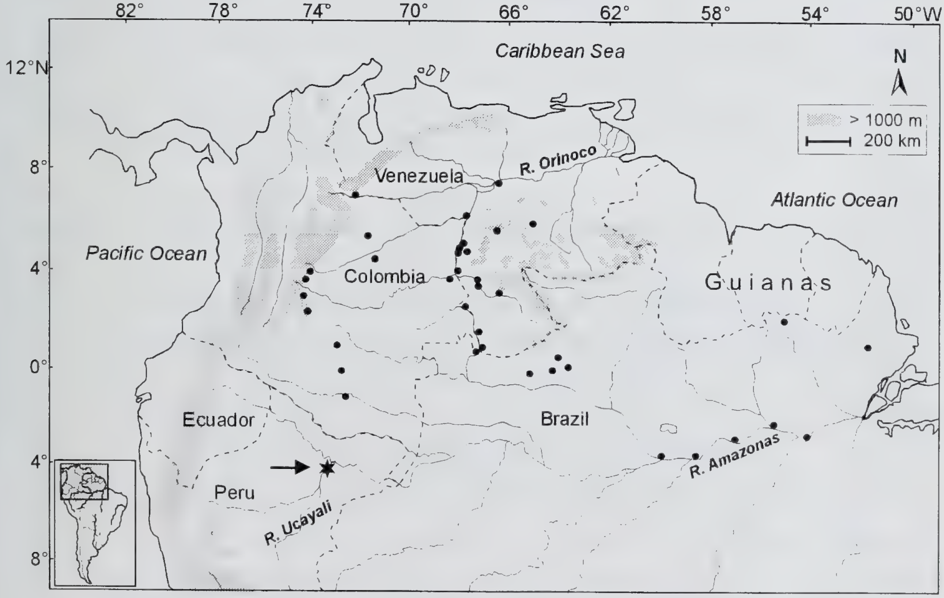

Figure 1. Distribution of *Agyrtria versicolor milleri*, based on examined specimens. Asterisk with arrow indicates single Peruvian locality Iquitos; dashed lines are political borders.

73°15´W; Stephens & Traylor 1983) is the only confirmed collecting site of *A. versicolor* for Peru as well as the south-westernmost record of *milleri*.

The SMF specimen is most likely an adult male (as noted on the label) which is indicated by its plumage colouration, e.g., the strongly glittering turquoise blue head feathers, extending to lores and neck, and by mensural characters (bill including operculum: 18.2 mm; wing, unflattened: 48.6 mm; rectrix 5: 27.6 mm; *cf.* Weller 1998). Females and immatures differ in these features by their less glittering and more turquoise crown feathers. Moreover, females exhibit greyish subterminal patches on the outermost tail feathers and have generally shorter wings and outer rectrices than males (Weller 1998). The back and rump of the Iquitos specimen are slightly darker, more emerald green to bluish green coloured, than in individuals from Colombia and Venezuela which have these plumage parts rather bronze-green.

Like other lowland amaziline trochilines of South America (e.g., *Polyerata fimbriata*; Weller 2000), *A. versicolor* inhabits chiefly semi-open habitats like *cerrados* (in Brazil) and edges of humid and gallery forests, ranging from near sea-level to *c.* 600 m (SE Colombia). The disjunct localities of specimen records for *A. v. milleri*, mostly located on riversides (Fig. 1), probably reflect collecting gaps rather than discontinuities in range since the preferred habitats are widespread across Amazonia. Similar distribution gaps, resulting from incomplete sampling, are assumed for several high-altitude Andean bird taxa, among them many hummingbirds (J. Haffer, pers. comm., Schuchmann *et al.* 2001). Assuming a continuous distribution within the western part of its range, *A. v. milleri* may also occur in the Río Putumayo and Río Napo drainages and thus might be still present in eastern Amazonian Peru. At the southern limits, no definite localities based on specimen records are known south of the Amazon, though one observation of *A. versicolor* from Porto Velho, Río Madeira (Ruschi 1982), probably refers to this race.

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Further observations of a *Microeca* flycatcher from the Bismarck Archipelago, Papua New Guinea

by Phil Gregory & Jon Hornbuckle

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The genus *Microeca* contains six species, in the family *Petroicidae*, the Australo-Papuan Robins, a heterogeneous group of small to medium-sized insectivorous birds in 14 genera (Sibley & Monroe 1990). The *Microeca* species strongly resemble the Old World flycatchers in appearance and behaviour but are restricted to New Guinea and Australia, except for the Golden-bellied Flycatcher *M. hemixantha* which is found further west in the forests of the Tanimbar Islands of Indonesia. All are birds of lowland and hill (Lemon-bellied Flycatcher *M. flavigaster*, Olive Flycatcher *M. flavovirescens*, Yellow-legged Flycatcher *M. griseoceps*), or montane forests (Canary Flycatcher *M. papuana*), with varying degrees of yellow in the plumage, except for the rather different Jacky Winter *M. fascinans* of dry lowland woods in Australia and savanna habitat around Port Moresby, Papua New Guinea, which is basically brown above and whitish below with extensive white outer tail feathers.

Brian Finch, Kathleen Shurcliff and the late John McKean were the first observers to report the presence of a *Microeca* species on the Bismarck Archipelago, Papua New Guinea, finding two birds near sea level at Lavege on New Britain, and two at 1,400 m near Taron on New Ireland between 20 and 27 April 1984 (Finch & McKean 1987). Single *Microeca*-type flycatchers were seen by Tony Palliser in the mountains near Taron, New Ireland in early December 1987 (Palliser 1988, Coates 1990). No further records of this genus on the archipelago have been published but there have been a few subsequent sightings, which we document here.

Single *Microeca*-type flycatchers were seen by Guy Dutson (*in litt.*) at 900 m near Taron on 4 August 1997 and by K. David Bishop (pers. comm.) near Walindi, West New Britain in 1998.

Neil Bostock, Jon Hornbuckle, Keith Turner and Barry Wright had three records in May 1999. The first, at 60 m above sea level at Gigipuna, New Britain, on 11 May, was of three birds in close proximity, 10 - 15 m away in roadside trees. They were observed for 15 min in good light, perched 3-10 m up, occasionally flycatching as well as possibly displaying, with frequent wing-flicking and lowering of wings to a drooped position, the tail also being lowered at the same time as the wings. No vocalizations were heard. To European eyes, they were small (12-13 cm), *Ficedula*-type flycatchers, like Red-breasted Flycatcher *F. parva*, hence almost certainly a *Microeca* species. The head was very rounded, with a dark eye and grey-brown plumage, slightly paler around the eye. The loral region to above the eye was also slightly paler than the crown but this paleness did not extend behind the eye. The bill was small, fairly broad-based, dark with a slightly paler base to the lower mandible. The throat was off-white, the underparts had a slight buffy wash, and one of the individuals showed an obvious pale central belly stripe, not noted on the other two. All had a whitish vent, and a square-ended tail, black underneath. Primaries were blackish, noticeably darker than other flight feathers and mantle, the latter being a grey-brown colour, as were the wing coverts. The primary projection was short, with little extension beyond the tertials. Leg colour was not noted. GD noted slight differences from this: his bird, high up a tree 30 m away, appeared to have a slightly darker cap; the pale lores extended through the eye across the face; the throat had a yellowish wash and the flanks a pale yellow wash.

An individual of what appeared to be the same species was subsequently seen by NB, JH, KT and BW on Mt Agil, New Ireland, at 680 m on 18 May, perched 10-15 m up in primary forest. It was difficult to discern details due to the height of the bird and the poor light conditions. Two days later, a similar bird was observed briefly a few kms away in roadside trees at 400 m.

Phil Gregory and Chris Eastwood saw a single bird along the Limbin Road, central New Ireland, O3°16' 0.72" S, 151°55' 76.9" E, on 1 June 1999 at an altitude of *c.* 850 m. Views of this bird, up to 30 m away, were in good light against both a leafy background and grey sky. The bird was watched for 30 minutes through a 30x telescope. It was initially perched on a tall dead acacia-type tree *c.*10 km from the start of the Limbin to Lelet road, by a large clearing, and was a typical small *Microeca*-type flycatcher. It differed from the Lemon-bellied Flycatcher of mainland Papua New Guinea, which occupies a similar habitat and has comparable habits, by being entirely brown above with a pale loral line, which extended indistinctly just past the dark eye. No grey was evident in the plumage, nor did the wings appear darker than the rest of the upperparts. The frons was pale, showing as a line at the base of the bill, a feature also shown by the Lemon-bellied Flycatcher in Papua New Guinea, but this bird was entirely dull whitish below with just a hint of pale olive yellow on the chin and throat in some conditions. The legs and feet were a dark grey, and the bill dark with a pale base to the lower mandible. Rictal bristles were also noted.

The voice was distinctive: a sweet twittering silvery song with a slightly buzzing quality, rather quiet and easily overlooked. It was given from a perch, the tail vibrating as the bird sang, and no song flight was noted. GD noted that his bird sang with a repeated high-pitched warble 'sweet-toi-toi-(toi-toi)' - consistent with PG's description. The Lemon-bellied Flycatcher often sings in flight and the song lacks the buzzy quality of this bird. The bird was very hard to detect as it sat on the ends of branches often near the centre of a large tree, for minutes on end.

PG had an additional, much briefer, sighting on 22 June 2000, at 950 m *c.*12 km along the Limbin-Lelet road, New Ireland, again perched and singing from a tall dead snag. The basic appearance was of a brown above and white below *Microeca.*

The New Britain birds described by Finch & McKean (1987) had a greyish head and sides of face, giving a capped appearance and lacking a loral line. They stated the upperparts to be dark olive with brownish-black wings and uniformly buff-olive underparts from chin to vent with highlights on the centre of the breast and along the flanks. The legs were dark, but they could not see whether the lower mandible was pale, although it did not appear to be. These authors reported that the New Ireland hill forest individuals were similar but did not seem as olive as the New Britain birds, although they did have the grey-capped head and dark feet. They described the song as a sweet "swit-tee" given rapidly, almost halfway between that of the Lemon-bellied Flycatcher and the Yellow-legged Flycatcher, in volume more like the latter. Both these plumage descriptions are somewhat different from subsequent reports, but this could be an artefact of lighting conditions and angles of view.

The birds differ in both plumage and song from the Lemon-bellied Flycatcher, which occupies lowland and hill open woodland and savanna habitat in Papua New Guinea and has similar habits. Other species of *Microeca* in New Guinea differ significantly in plumage and can be excluded from consideration. The Yellow-legged Flycatcher, of lowland and hill forest from New Guinea and Cape York Peninsula, Australia, has bright yellowish legs and a greyish head with white throat. The bright yellow Canary Flycatcher is strictly montane and has bright orange legs, whilst the Olive, also of lowland and hill forest, is entirely olive and yellowish with a distinctive reeling call.

Although there are no specimens or photographs, an unobtrusive, low-density population of a *Microeca*-type species clearly exists in the hill forest of New Ireland and the lowland forest of New Britain. It is possible that two taxa are involved, but as yet no consistent differences have been noted between birds on the two islands, as all descriptions of the birds differ to some degree. The bird is most likely an insular allo-species of *M. flavigaster*, a widespread Australasian species, and represents a considerable range extension for the genus. Tape recordings and a specimen are desirable before firm conclusions can be reached, but this note serves to draw attention to a hitherto overlooked taxon. The authors would welcome receipt of any additional sightings.

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